

INDIAN ENGINEERING INDUSTRIES

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The Late Mr Durga Prasad Khaitan, Founder of
The Engineering Association of India

PREFACE

This third edition of the 'Indian Engineering Industries' includes the following features : an alphabetical list of all the members of the Engineering Association of India ; a section on Patents and Trade Marks regulations ; an alphabetical illustrated Index of Trade Marks and Brands of the manufacturing firms in the Association together with the articles to which they are applied ; a Buyer's Guide for the products of the members ; a section on the Tariff Policy of the Government of India together with the activities of the Tariff Board and also a summary of their recommendations and Government decisions with regard to protection and assistance to various engineering industries in the country ; import figures from 1935-36 to 1946-47 for all the important engineering industries ; a section giving names and addresses of foreign manufacturers of plants and tools needed by India ; this section is followed by another section containing the names and addresses of India Government ambassadors, trade commissioners and legations abroad and also those of foreign countries in India whose good offices are available for promoting Indian interests ; a brief description of the individual factories in the membership of the Association ; and lastly we have given a 'Who is Who' section which gives a brief life sketch of eminent personalities in the engineering industry.

The last edition was universally acclaimed as a very valuable addition to the reference literature which is, in fact, the main objective behind this. We strongly hope that this 1948-49 edition will be found useful and informative by the readers.

By Authority



Darab Cursetji Driver
President
Engineering Association of India
(1943—46)

CONTENTS.

—:0:—

	PAGE
1. Activities of the Engineering Association of India	1
2. What is the Engineering Association of India ...	1
3. What does the Engineering Association do ...	2
4. Services to Individual Members	3
5. Introduction	6
6. List of Members and their Addresses	11
7. Patents, Designs & Trade Marks	34
8. Brands and Trade Marks of the members of the Association	44
9. Buyer's Guide	71
10. Tariff Policy of India & the Tariff Board ...	145
(1) Alloy Tool & Special Steels Industry ..	155
(2) Aluminium Industry	157
(3) Antimony Industry	160
(4) Bicycle Industry	163
(5) Coated Abrasives Industry	165
(6) Cotton & Hair Belting Industry	168
(7) Cotton Textile Machinery	169
(8) Dry Battery Industry	170
(9) Electric Motors	171
(10) Ferro-Silicon Industry	173
(11) Fire Hose Industry	174
(12) Grinding Wheels Industry	175
(13) Hurricane Lanterns Industry	177
(14) Machine Tools Industry	178
(15) Motor Vehicle Battery Industry ..	182
(16) Non-ferrous Metals Industry	186
(17) Screw Industry	193
(18) Sewing Machine Industry	195
(19) Steel Baling Hoops Industry	197
(20) Steel Belt Lacing Industry	200
(21) Wire Healds Manufacturing Industry ...	201

	PAGE
11. Import Figures 1935-36 to 1946-47	202
12. List of Machine Tools Mfrs. <i>in</i> :	
1. Japan	220
2. Canada	222
3. France	226
4. Australia	228
5. Britain	229
6. U. S. A.	239
13. Indian Government Trade Commissioners abroad	249
14. Foreign Governments Trade Commissioners in India	251
15. Indian Ambassadors & other representatives abroad	252
16. Indian Government High Commissioners & other representatives in the Commonwealth Countries ...	253
17. Foreign & Commonwealth representatives in India	254

DESCRIPTION OF INDIVIDUAL FACTORIES

Acme Mfg. Co., Ltd	271
Agarwal Hardware Works Ltd.	272
Agarwal Iron Works	272
Agricultural Industries (Regd.)	272
Ajax Products Ltd.	273
Aluminium Corporation of India Ltd.	274
Aminchand Bholanath	275
Aminchand Payarelal	276•
Anandram Mahadeolal	277
A. R. Shining Foundry & Engineering Works	278
Associated Contractors Ltd.	278
Atta's Iron Foundry	278
Banta Singh Shamir Singh	279
Bagri Iron & Steel Co.	279
Batliboi & Company	279
Bengal Belting Works Ltd.	281
Bengal Electric Lamp Works Ltd.	283

	PAGE
Bengal Metal Works Ltd. ...	284
Bengal Rolling Mills Ltd. ...	284
Bhandari Iron & Steel Co. ...	284
Bhartia Electric Steel Co., Ltd. ...	285
Bharat Iron & Steel Corporation ...	286
Bharat Sheet Metal Industries Ltd. ...	287
Bharat Tool Manufacturing Co., Ltd. ...	287
Binani Metal Works Ltd. ...	288
Bindeswari Iron & Steel Corporation ...	289
B. M. Singh & Son ...	290
Bolinjkar Metal Works Ltd. ...	290
Bombay Steam Navigation Co., Ltd. ...	291
Britannia Engineering Works & Foundry ...	292
Bubna Engineering Co. ...	293
Bungo Steel Furniture Ltd. ...	293
Burjorji Pestonji & Sons Ltd. ...	293
Calcutta Electrical Mfg. Co., Ltd. ...	295
Calcutta Expanded Metal Mfg. Co., Ltd. ...	296
Castings Corporation (India) Ltd. ...	297
Chhuttan Lall Mattu Mall... ...	298
Cooper Engineering Ltd. ...	299
Delhi Iron Syndicate ...	304
Development of Metal Industries Ltd....	304
Dhiraj Pen Mfg. Co., Ltd. ...	304
D. K. Das & Co., Ltd. ...	306
D. N. Singha & Co., Ltd. ...	309
Dukhineswar Sarkar & Bros. Ltd. ...	310
Dutson Engineering Corporation Ltd....	310
East India Steel Works Ltd. ...	310
Electric Construction & Equipment Co., Ltd. ...	311
Engineering Works of India Ltd. ...	312
Firestone Tyre & Rubber Co. of India Ltd. ...	313
F. N. Gooptu & Co. ...	314
Ganpatray Ramnarain & Co. ...	316
Garlick & Company ...	316
Godrej & Boyce Mfg. Co., Ltd. ...	318

	PAGE
Goodman & Co.	320
G. T. R. Co., Ltd.	320
Hanuman Engineering Works Ltd.	321
Harbanslal Malhotra & Sons Ltd.	322
Hazra Engineering Works	323.
Hind Constructions Ltd.	324
Hind Cycles Ltd.	324
Hind Machines Ltd.	326
Hind Screws & Metals Works	328
Hind Tank Mfg. Co.	327
Hindustan Abrasive	329
Hindustan Bicycle Mfg. & Industrial Corpn. Ltd....	329
Hindustan Construction Co., Ltd.	330
Hindustan Metal Refinery & Rolling Mills	330
Hindustan Motors Ltd.	330
Hindustan Wire & Metal Products Ltd.	332
Howrah Trading Co., Ltd.	332
India Ammunition Syndicate Ltd.	334
India Cycle Mfg. Co., Ltd.	334
India Electric Works Ltd.	335
India Machinery Co., Ltd.	336
Indian Clock Mfg. Co., Ltd.	337
Indian Commerce & Industries Co., Ltd.	338
Indian Enamel Works Ltd.	339
Indian Engineers' Corpn., Ltd.	339
Indian Expanded Metals Ltd.	341
Indian Hume Pipe Co., Ltd.	341
Indian Malleable Castings Ltd.	342
Indian Smelting & Refining Co., Ltd.	348
Indian Standard Metal Co., Ltd.	349
Indian Steel & Wire Products Ltd.	350
Indian Tool Manufacturers Ltd.	352
Investa Machine Tools & Engineering Company Ltd.	354
Jaipur Metal Industries Ltd.	355
Jagatjit Engineering Works	356
Jamnadas Brothers	356

	PAGE
Jamshedpur Engineering & Machine Mfg. Co., Ltd.	357
Jas. Alexander & Co., Ltd.	358
Jayant Metal Mfg. Co.	360
Jay Engineering Works Ltd.	361
Jeewanlal (1929) Ltd.	362
J. K. Iron & Steel Co., Ltd.	364
Jogendra Nath Chatterji & Sons	364
Jyoti Ltd.	365
Kamani Engineering Corporation Ltd.	366
Kamani Metals & Alloys Ltd.	368
Kapurthala Industries Ltd.	368
Kaycee Industries Ltd.	369
Khemchand Rajkumar	371
Kirloskar Bros., Ltd.	372
Krishnalal Thirani & Co., Ltd.	373
Kushumika Iron Works Ltd.	373
Lallubhai Aminchand	374
Leipzig Chemical & Engineering Works	374
Liluah Iron Works	376
Ludhiana Steel Rolling Mills	377
Machine Mfg. Co., Ltd.	378
Madras Enamel Work Ltd.	378
Malleable Iron & Steel Castings Ltd.	379
Mapara Parekh & Co.	379
Matchwel Electricals (India) Ltd.	379
Metal Press Works Ltd.	380
Metal Spraying Products	381
Metropole Works	382
Motor House (Gujarat) Ltd.	383
Mukand Iron & Steel Works Ltd.	383
Mysore Iron & Works	384
Mysore Kirloskar Ltd.	387
Mysore Premier Metal Factory	387
Nathmall Girdharilal	388
National Bearing Co., Ltd.	388
National Insulated Cable Co., of India Ltd.	388

	PAGE
National Iron & Steel Co., Ltd. ...	391
National Metal Industries Ltd. ...	394
National Rolling Mills Ltd. ...	397
National Sand Paper Mills (India) Ltd. ...	398
National Screw & Wire Products Ltd. ...	398
New Standard Engineering Co., Ltd. ...	400
Ogale Glass Works Ltd. ...	402
Orient Industrial Engineering Co., Ltd. ...	402
Orient Safe & Cabinet Mfg. Co., Ltd. ...	403
Paul's Engineering Co. ...	404
Peepul Iron & Steel Industries Ltd. ...	405
P. N. Dutt & Co., Ltd. ...	406
Practical Engineering Co. ...	407
Pradip Lamp Works ...	407
Precious Die Works ...	409
Premier Automobiles Ltd. ...	409
Radha Govind Industries Ltd. ...	410
Radhey Lal Steel Rolling Mills ...	410
Radio Lamp Works Ltd. ...	410
Raghu Engineering Works Ltd. ...	410
Reliable Water Supply Service of India Ltd. ...	411
Renwick & Co., Ltd. ...	413
R. Tarruck & Co. ...	414
Saru Smelting & Refining Corporation Ltd. ...	414
Scindia Steam Navigation Co., Ltd. ...	416
Sewri Engineering Works ...	417
Shaparia Dock & Steel Co., Ltd. ...	417
Shivaji Works Ltd. ...	419
Shree Hanuman Steel Rolling Mills Co., Ltd. ...	419
Shree Jam Wire Products Co., Ltd. ...	420
Shree Krishna Ltd. ...	420
Shree Laxmi Iron & Steel Works Ltd. ...	420
Singh Engineering Works Ltd. ...	420
Sree Gopal Iron Works ...	421
Star Iron Works ...	422*
Star Metal Refinery ...	424

	PAGE
Steel Equipment & Construction Ltd. ...	425
Steel Products Ltd. ...	426
Structural Engineering Works Ltd. ...	427
Swadeshi Industries Ltd. ...	428
Tata Iron & Steel Co., Ltd. ...	429
Tata Locomotive & Engineering Co., Ltd. ...	433
Tatanagar Foundry Co., Ltd. ...	434
Textile Machinery Corporation Ltd. ...	434
Thakurdass Sureka ...	436
Tin Printing & Metal Works Ltd. ...	436
United Iron & Steel Corporation Ltd. ...	437
Universal Screw Factory ...	437
Usha Bolt & Nut Co. ...	438
Vasant Engineering Ltd. ...	438
Vasant Industrial & Engineering Works ...	438
Victor Industries ...	439
Victory Engineering Works ...	441
18. Who is who in the Engineering Industry ...	443

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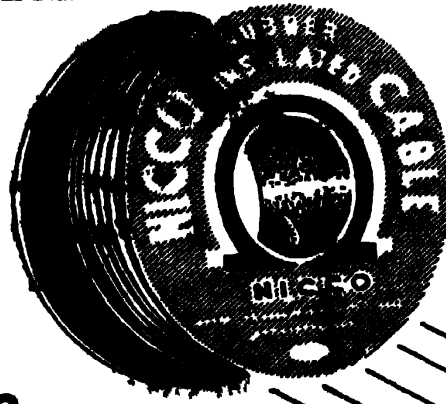


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INDEX TO ADVERTISERS

—:0:—

	PAGE.
A	
Agarwal Iron Works	ix
Ajax Products Ltd.	xiv
Allen Berry & Co.	86
All India Spring Mfg. Co.	xviii
Associated Contractors Ltd.	vi
Attas Iron Foundry	33
Avery Company Ltd.	... <i>First fly leaf</i>
B	
Batliboi & Co.	217
Bengal Belting Works Ltd.	xi
Bengal Iron & Steel Works	l
Bengal Metal Works Ltd.	x
Bengal Miscellaney Ltd.	ix
Bhartia Electric Steel Co., Ltd.	xx
Binani Metal Works Ltd.	270
British India Spring & Steel Co.	267
B. M. Singh & Son	xiii
Bolinjkar Metal Works	<i>Facing P. 290</i>
Bungo Steel Furniture Ltd.	114
C	
Calcutta Collapsible Gate Co., Ltd.	ix
Calcutta Electrical Mfg. Co., Ltd.	128
Calcutta Expanded Metal Mfg. Co., Ltd.	269
Castings Corporation (India) Ltd.	xv
Cooper Engineering Ltd.	115
D	
D. K. Dass & Co., Ltd.	396
Dawn & Co.	iv

E

East India Steel Works Ltd.	v
Electric Construction & Equipment Co., Ltd. ...	<i>Inside front cover</i>
Engineering Works of India Ltd. ...	xxii

G

Garlick & Co.	77
General Electric Co., of India Ltd. ...	144
Geo. Miller & Co., Ltd. ...	395
Godreje Boyce Mfg. Co., Ltd. ...	143

H

Hanuman Engineering Works Ltd ...	70
Hind Cycles Ltd. ...	101
Hindustan Motors Ltd. ...	i
Hindusthan Sheet Metal Co., Ltd. ...	g
Hindusthan Wire & Metal Products Ltd. ...	218
Hooghly Bank Ltd. ...	68
Howrah Trading Co. Ltd. ...	xvi

I

India Cycle Mfg. Co., Ltd. ...	442
India Electric Works Ltd. ...	<i>Back cover</i>
India Machinery Co., Ltd. ...	xvii
Indian Commerce & Industries Co., Ltd. ...	iv
Indian Malleable Castings Ltd. ...	<i>Last fly leaf</i>
Indian Smelting & Refining Co., Ltd. ...	<i>Last fly leaf</i>
Indian Standard Metal Co., Ltd. ...	92
Indian Steel & Wire Products Ltd. ...	69

J

J. K. Iron & Steel Co., Ltd. ...	268
Jamnadas Brothers ...	vi
Jas. Alexander & Co., Ltd. ...	43
Jay Engineering Works Ltd. ...	94
Jeewanlal (1929) Ltd. ...	76

K

Kamani Metals & Alloys Ltd.	...	...	108
Kapurthala Industries Ltd.	...	...	v
Kassels Ltd.	...	...	<i>Inside back cover</i>
Kaycee Industries Ltd.	...	...	78
Kirloskar Brothers Ltd.	...	...	109
Krishnalal Thirani & Co., Ltd.	...	...	92
Kusum Engineering Co., Ltd.	...	...	216

L

Leipzig Chemical & Engineering Works	...	...	468
--------------------------------------	-----	-----	-----

M

Machine Tools (India) Ltd.	...	...	102
Mahabir Electrical Works	...	...	ix
Matsua Trading Co.	...	...	iv
Mukand Iron & Steel Works Ltd.	...	...	84
Mysore Iron & Steel Works	...	...	267

N

National Bearing Co., Ltd.	...	...	68
National Insulated Cable Co., of India Ltd.	...	...	h
National Iron & Steel Co., Ltd.,	...	...	xix
National Metal Industries Ltd.	...	...	<i>Last fly leaf</i>
National Rolling Mills Ltd.	...	...	396

O

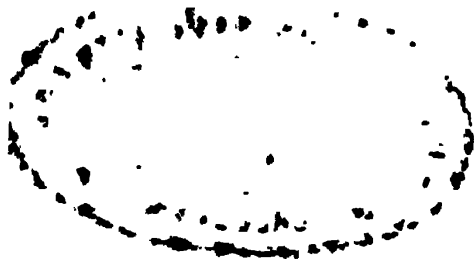
Orient Safe & Cabinet Mfg. Co. Ltd.	...	...	viii
-------------------------------------	-----	-----	------

P

Pradip Lamp Works	...	...	iii
Premier Automobiles Ltd.	...	...	93

R

Railway Engineering Corporation	...	...	219
Ram Dutt Ramkissen Dass	...	...	xii
Reliable Water Supply Service of India Ltd	...	...	<i>First fly leaf</i>



(1)

PAGE.

S

Saru Smelting & Refining Corporation Ltd.	...	<i>Front cover</i>
Star Iron Works	... ..	vii
Star Metal Refinery	... ..	70
Star Printing Works	... ..	xxi
Structural Engineering Works	...	<i>Facing P. 291</i>
Swadeshi Industries Ltd.	... ..	ii

T

Tata Iron & Steel Co., Ltd.	... ..	100
Textile Machinery Corporation Ltd.	...	266
Tide Water Oil Co., (India) Ltd.	...	<i>Facing P. 252</i>

V

Vasant Industrial & Engineering Works	...	85
Vickers (Eastern) Ltd.		10

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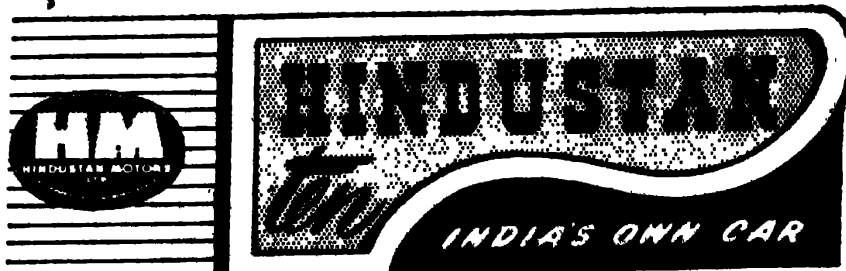
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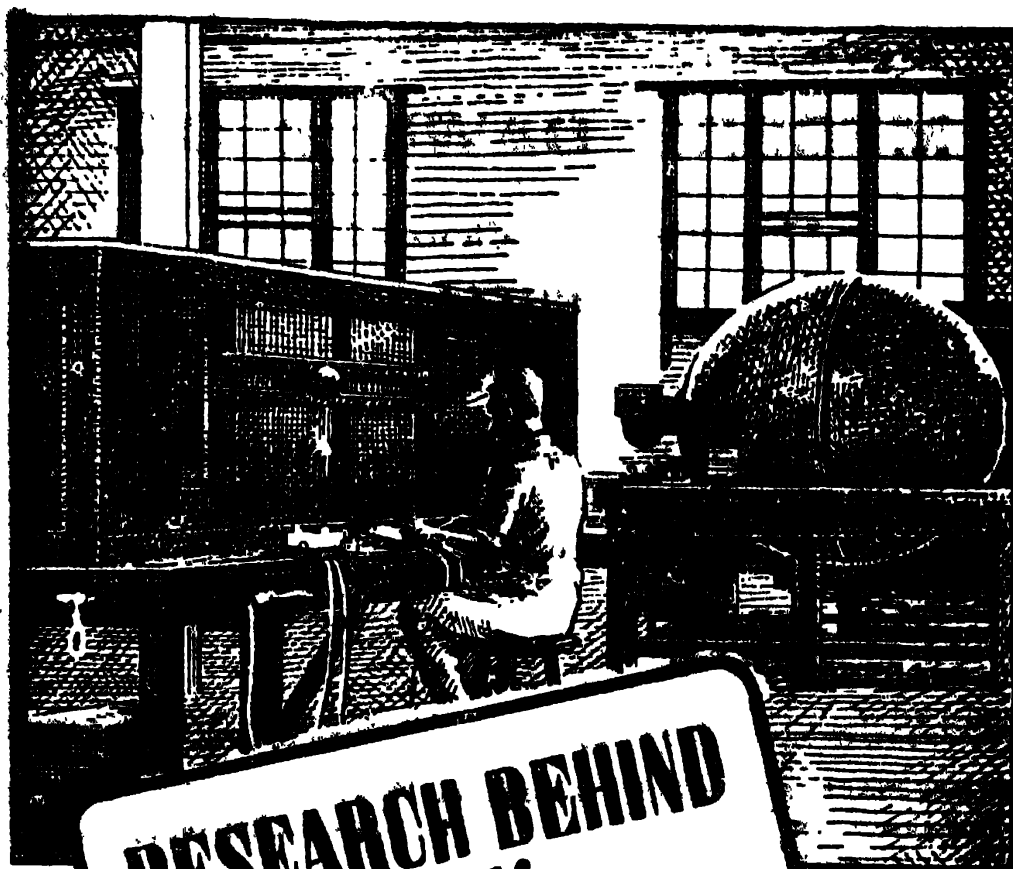
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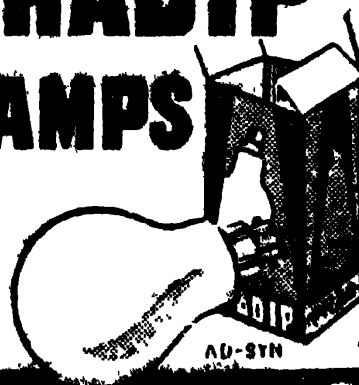
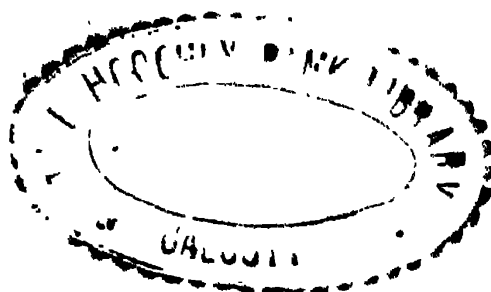
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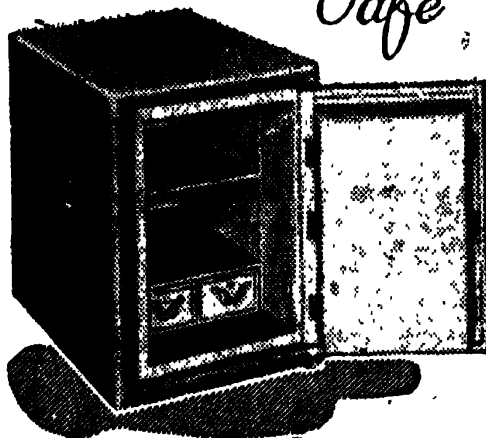
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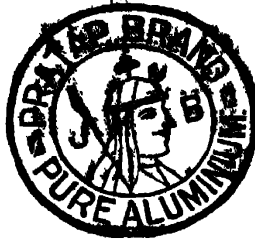


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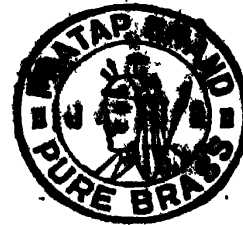
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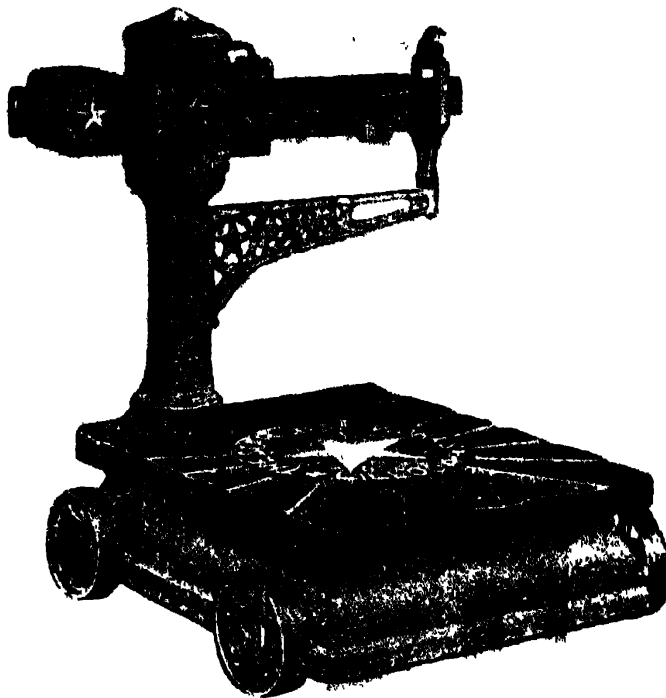
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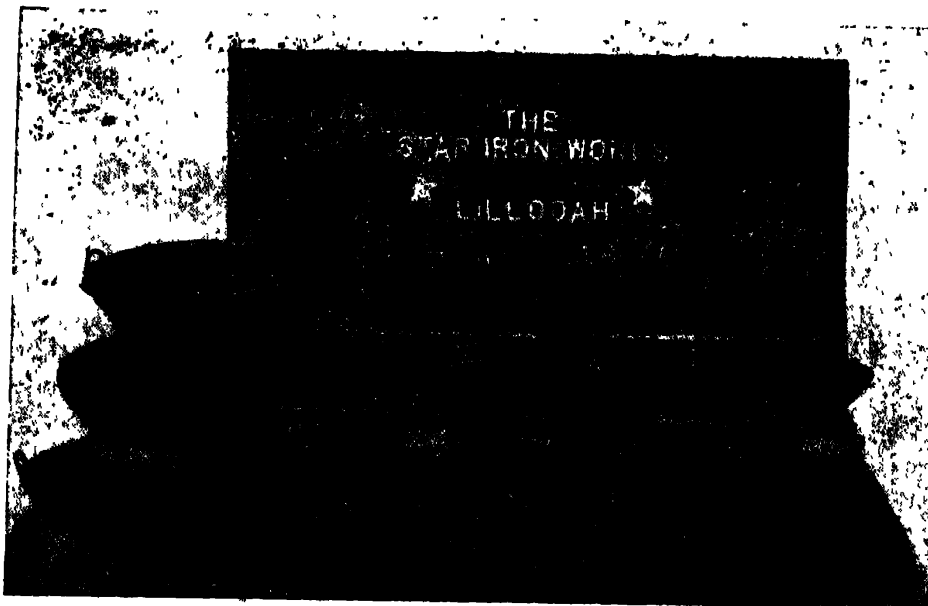
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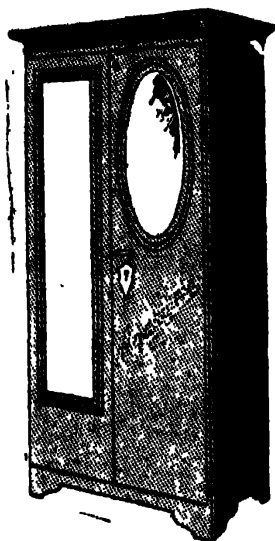
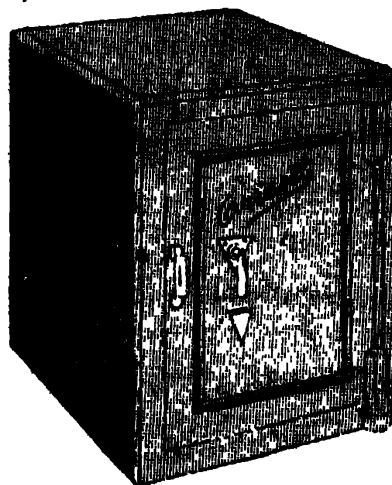
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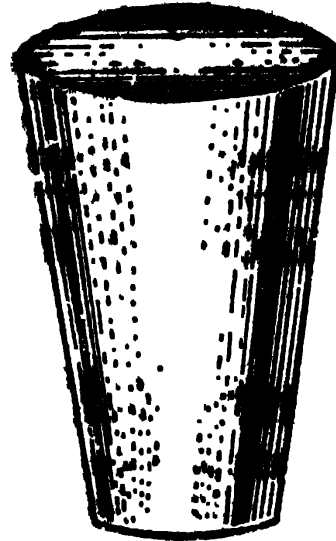
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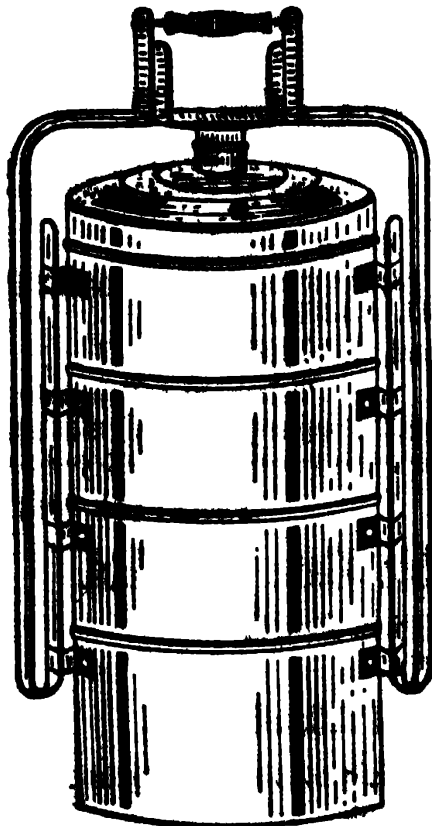


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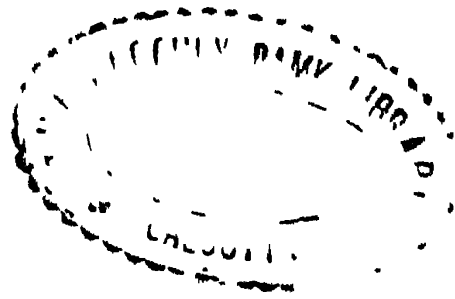
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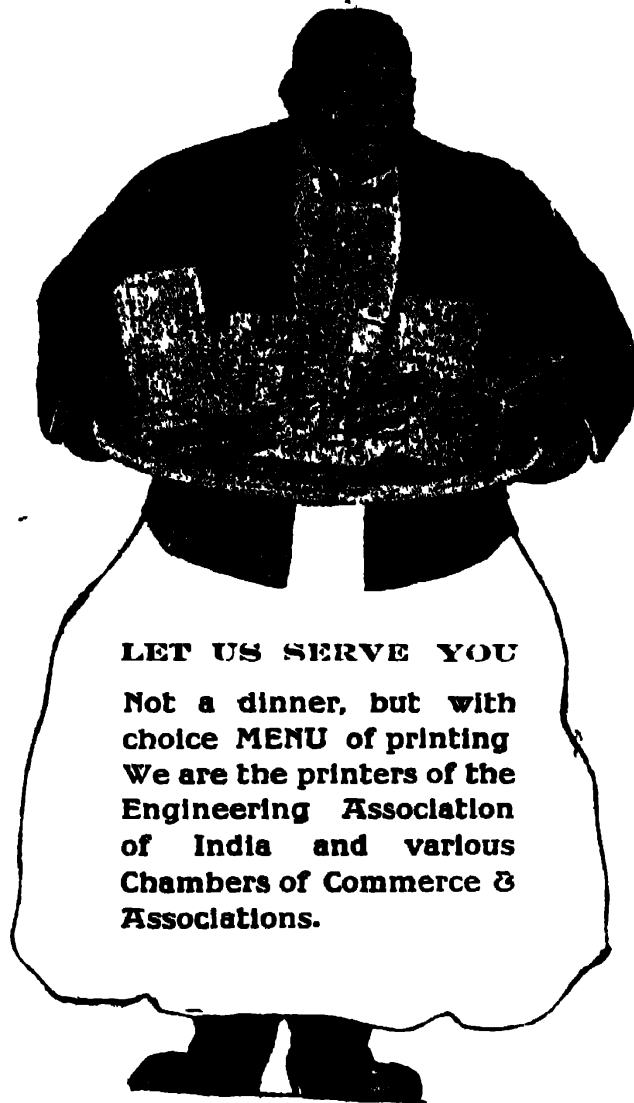
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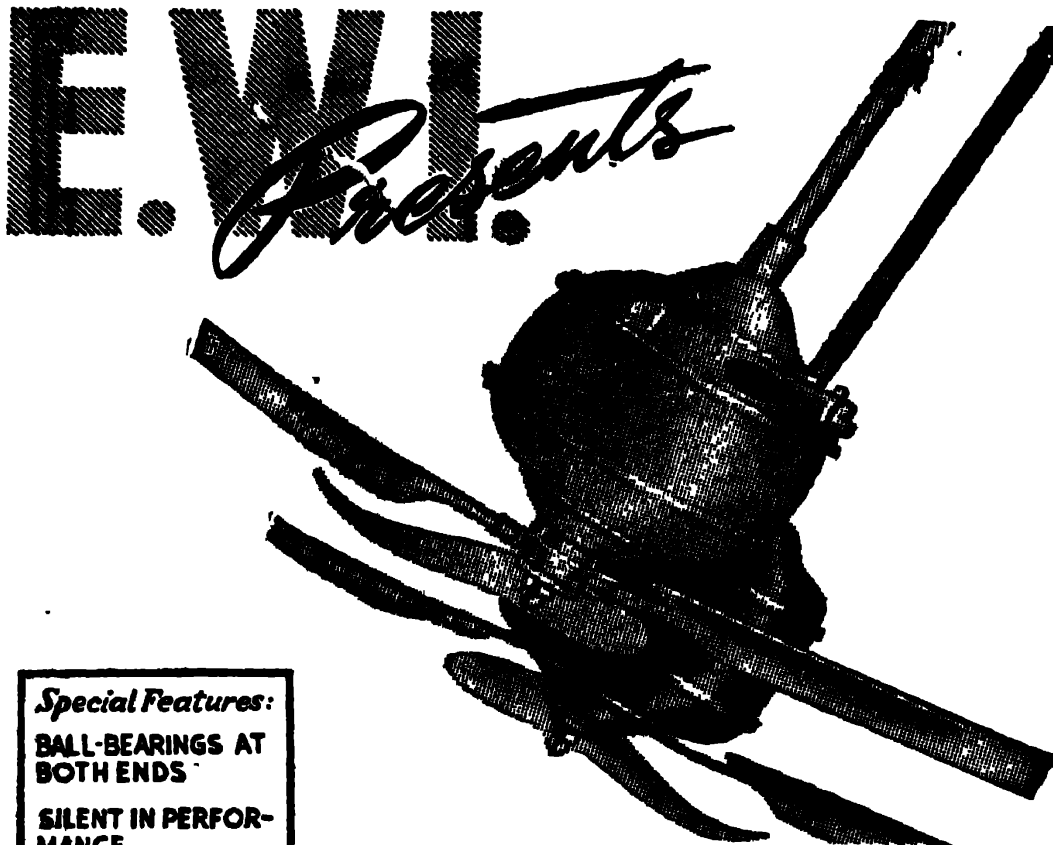
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A. K. Bhattacharya
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Engineering Association of India
(1948-49)

ACTIVITIES

OF

The Engineering Association of India

WHAT IS THE ENGINEERING ASSOCIATION OF INDIA

THE OBJECT of the **Association** is to encourage and develop Indian Engineering and allied industries and to safe-guard the interests of Indian manufacturers. Nothing that concerns the welfare of the industry falls outside the scope of the Association's interests.

The Engineering Association of India was founded in March, 1942 at the initiative of the late **Mr. Durga Prasad Khaitan** who more than anybody else realised the impact of war on engineering industries in India and the necessity of an all India organisation to combat the various problems facing Indian Industrialists.

The growth of the Association considering that it has just entered the 5th year of its life—period too short in the life of an institution—has been remarkable and its membership now comprises of 178 firms engaged in various engineering and allied industries.

The Engineering Association of India is affiliated to the Indian Chamber of Commerce, Calcutta, which is accepted by all, the press, the public and the legislature to be one of the premier organisations of Indian business and industrial interests. The Engineering Association of India is a member of the Federation of Indian Chambers of Commerce and Industry which is the premier most body representing Indian commerce and industry; the Engineering Association of India is also a member of the All-India Organisation of Industrial Employers which concerns itself with all aspects of labour.

Constitutionally it is a voluntary association of engineering firms for the promotion of their several and mutual interests and it is governed by a Committee of 11 elected and 5 co-opted from amongst its members.

WHAT DOES THE ENGINEERING ASSOCIATION DO

BROADLY, its activities have developed along two lines. It renders service to the industry as a whole in its dealings with the Government and other interests, and it renders to individual firms a thousand and one private services in representing their cases to Government in securing their raw materials and orders for their manufactured goods, in helping them to know the sources of supply of their requirements etc., etc.

Co-operatively it expresses the views of engineering industrialists on a vast number of questions such as industrial legislation, factory Acts, tariffs, taxation, artisan training and technical education etc., etc.

The existence of the Engineering Association of India enables the views of manufacturers of engineering and allied products throughout the country to be gathered together and presented to the proper quarter, with all the weight of an organised industry behind them. The Engineering Association of India refrains from purely destructive criticism, and attempts to contribute to the counsels of the nation the constructive views of producers in our industry, upon whom the country's welfare considerably depends. Such a function could not be carried out without the assistance of an organisation to collect and co-ordinate facts and opinions, and without a staff to sift and prepare them for presentation to legislature or the public.

The Right of Private Enterprise is one of the main planks of the Association's policy, and it co-operates with kindred organisations for the conservation of such rights and the advancement of the country's prosperity.

SERVICES TO INDIVIDUAL MEMBERS

(Services covered by members' Subscriptions and offered without extra charge include the following):

Adjudication.—The Association's officers appear before courts and other tribunals to safe-guard individual and collective interests of the members.

Award.—Copies of all awards are forwarded to members gratis immediately upon publication.

Advisings.—The Association's staff is always available to advise on any difficulties arising out of the multitudinous acts, regulations and awards concerning the engineering and allied industries. Personal assistance is given in the factories regarding questions of labour disputes and necessary procedures to comply with various industrial regulations.

Customers.—The Association receives frequently trade enquiries from prospective buyers and introduces them to the members.

Customs duties.—The Association's staff gives assistance in all questions relating to customs duties. Statistics are kept as far as possible both of local and foreign trade and information can always be supplied on request.

Enquiries for goods.—If the product you are looking for is not to be found in the Buyer's Guide section the Association will find out who makes it.

Foreign Trade.—Members are advised regarding rules and regulations imposed by provincial and central Governments in export and import trades. Prospects in foreign countries for the goods manufactured are also examined. Sources of availability of foreign materials required by members are also supplied on request.

Inter Trading.—The Association pays every attention for facilitating inter-trade amongst the members.

Introduction.—Letters of introduction to organisations or individuals which may be helpful are supplied to representatives of members when required.

Labour information.—Elaborate statistics and information concerning wages and labour conditions in India and other countries are maintained and are available for the use of the members.

Library.—The Association's library contains technical books, periodicals and journals which can be had on loan or consulted by members.

Legal Advice.—The Association's staff is always available for advice in connection with difficulties regarding industrial laws.

Parliamentary Activities.—All bills introduced into the Central or Provincial Assemblies are carefully studied by the Engineering Association of India and if necessary appropriate representations are made to the Government.

Government Regulations.—These regulations are carefully studied and the Association office keeps constantly in touch with fresh regulations imposed and with the modifications of old ones with a view to safeguarding the interests of the members and for the purpose of acquainting them with the obligations they are under.

Publications.—In addition to frequent publications on technical matters, labour problems etc. the Engineering Association of India issues fortnightly '**The Engineering News**' containing latest informations on industrial matters and items of general interest to the engineering and allied industries.

Renewed editions of the '**Indian Engineering Industries**' are issued every year.

Taxation.—The Association keeps constant watch and tries to protect the interests of the members against undue burden



Binay Krishna Rohatgi
President
Engineering Association of India
(1946--48)

of various kinds of taxes to make representation to Government and to advise members as to their legal responsibilities under various taxes and as to the latest departmental rulings.

Tariff Problems.—The Association gives advice and assistance in the preparation of memoranda or evidence for submission to the Tariff Board with a view to securing protection against foreign competition.

In addition to the above members' subscription also cover numerous other services rendered by the Association.

INTRODUCTION

The Engineering Industry in the country, which baffled the Tariff Board in 1925 in assigning a definite classification to the term 'Engineering' on account of its diminution, is rapidly on the increase. With the march of time, works and repair shops which symbolised the Indian Engineering Industry 50 years ago have gradually given place to productive units and the lead given by the Tatas in Steel Industry has by and by seen the establishment of many more industries in the country. Iron and Steel Industry had developed fairly well but other engineering industries were just coming up till the Second World War (1939) stirred up the demand for such engineering goods as tanks, bombs, guns and other war materials. This opened the way for a number of formerly unknown engineering industries to be established earlier than would have otherwise been possible. The entire engineering skill obtainable in the country was mobilised. In spite of the fact that machine tools and capital equipment could not be procured from abroad, wide-spread progress was recorded in all spheres of engineering industry. Ferrous, Non-ferrous, Electrical, Mechanical, Structural, Ship-building and Machine Tools, all got a fillip and Electric Fans, Electric Lamps, Electric Motors, Cables, Automobiles, Bicycles, Sewing Machines, Hurricane Lamps, Machine Tools, Steel Belts, to mention a few only, for all of which India depended solely on foreign sources of supply, began to be had indigenously.

At the end of the war Indian Engineering Industry found itself suddenly on the thresh-hold of vast opportunities and great responsibilities. A changeover from war economy, with its rigours of controls, its emphasis on the production of particular types of engineering stores for the requirements of the army, its diversion of the economic resources of the country from civilian to defence purposes, its mobilisation of the man-power of the country for war purposes and the manifold re-action which such measures produce in the economic life of the nation, to a peacetime economy could not be an easy task. The period of transition was further accompanied by release of the man-power

and the engineering stores accumulated with the defence organisation with all its repercussions on the Indian Engineering Industries.

Bulk orders of the Government were to go, licensing of imports was to continue, defence requirements had to yield place to civil, controls had to be operative and yet the Indian Industries which had sprung up during the war had to be saved from foreign competition to enable them get established and adjusted to peacetime economy.

All this stressed the imperative necessity of an organisation and the credit of taking the initiative towards organising one such organisation of Indian engineering manufacturers goes to late Sri Durga Prasad Khaitan whose enthusiasm, diligence, foresight, and keen interest not only brought it into being in 1942 but put it on a sound pedestal. Seven years ago it began with a modest membership of 14 engineering concerns but it has steadily been increasing and to-day it has 181 factories in its fold.

The Indian Engineering Industry, emerged out of the war, considerably expanded and developed. With the achievement of freedom, India's vast potential resources urge it to take still rapid strides for there is still much ground to be covered before India can have any place in the hierarchy of industrially advanced countries.

Indian Steel Industry which is the key to all other industries is to be expanded by setting up two more works which will increase the Indian capacity for steel by one million tons.

India's power resources are expanding. The present capacity of 1.4 million KW will be raised to two millions by 1950 and 3.57 millions by 1955. Manufacture of heavy electrical plants, telephones, aircraft, ships, locomotives, to speak of big ones, is in hand.

These and many more already developed industries under the stress of the war call for shelter of protection for sometime to enable them to stand on their feet so that they are not washed away by the swelling inflow of foreign goods many of which, in our frantic effort to combat inflation, now find a place on the

Open General Licence. As it cannot be expected that the Government would postpone indefinitely the formulation of a long-term tariff policy, it is imperative that our efforts in the direction of standardisation and efficiency are not held up for long. An Indian Standards Institution has been set up; Quality Control Movement is afoot; facilities for technical education are being increased; Research Organisations are being developed; Patent regulations are being modified, and all are intended to give a smart fillip to our industrialisation schemes under a planned system.

Obviously those problems that face the industries cannot be safely handled and looked after by any one, individually. It is, therefore, necessary that all who are interested in the development of Indian Engineering Industries should be in a position to come together and evolve out a concerted course of action.

The Engineering Association of India—and it is the premier organisation of its kind in the country with a record of admirable service to the Engineering Industry—provides this common ground and this annual publication of the Association pretends to throw light and give information on the various items which are of immediate vital importance to the country.

Its last edition had attempted to give a survey of the engineering industry in the country and pointed out in what direction the industry was being directed and where further there was a need and scope of additional development.

The current edition has stressed the need for immediate and rapid expansion with an alert eye on sound development. Accordingly a chapter on Patents and Designs and Trade Marks has been inserted to enable the readers to know how and why they should avail of the Patent System in the country to the full. The Imports Section contains the import figures from abroad during the years 1935-36 to 1946-47. A list of leading foreign manufacturers, whose products India is likely to continue to import for sometime in view of the vast expansion schemes and need for capital equipment has also been included in the section to enable the consulting public to know in what direction their enquiries may be directed for ready response.



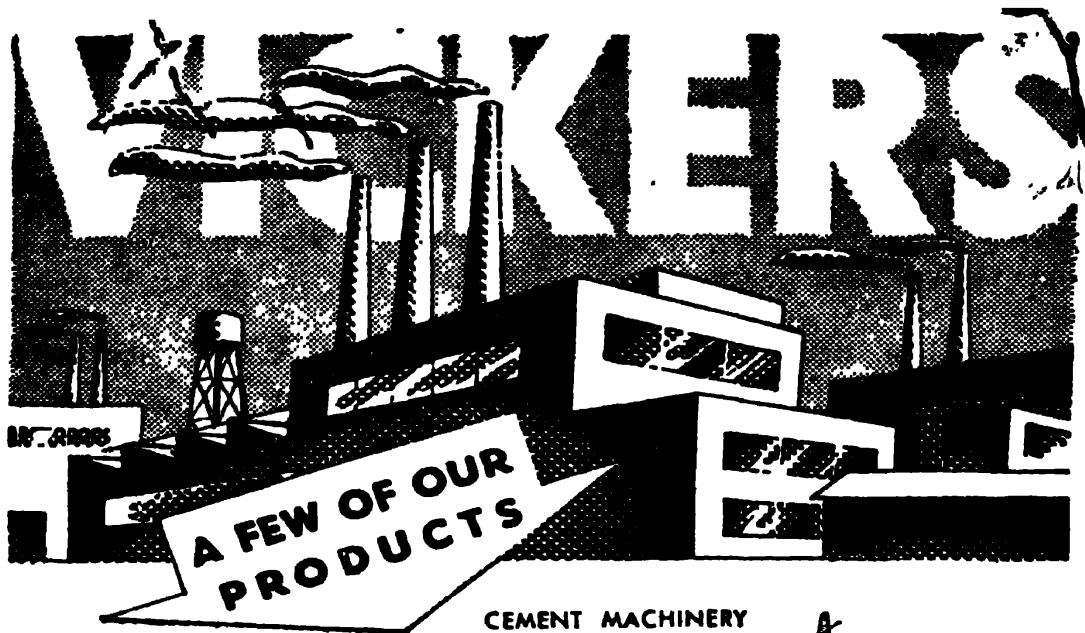
Seth Ratanchand Hirachand
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Bombay Branch

(Director, Indian Hume Pipe Co., Ltd.)

A section on Tariff regulations and activities of the Tariff Board deals, in great detail, with the engineering industries which are enjoying varying degrees of protection. It throws light on the need to continue a vigorous policy of protection because it is thus and thus alone, that our industries can be enabled to develop and, make the country self-sufficient both in times of war and peace.

Another new Section is the "Who is Who" section in Engineering Industry. In view of the fact that vast number of engineering industries in the country are new, it will be of considerable industrial and historical interest to know who and to what extent gleaming personalities in the engineering industry have played a part in the development of our industries.



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Telegrams: Bharattool

BINANI METAL WORKS LTD

Office: 38, Strand Road
CALCUTTA
Works: Foreshore Road
HOWRAH
Telephone: *Office:* BB. 5383
Cal. 5430
Works: How. 1034
Telegrams: Nonferrous

BINDESWARI IRON & STEEL CORPORATION

Office: 77, Kailash Bose Street
CALCUTTA, 6
Works: "Bindeswarinagar"
P. O. Barbaj
Dist. Deoria (U. P.)

B. M. SINGH & SON

Office:
& 1, Crooked Lane
Works: CALCUTTA

B—Contd.

Telephone: Cal. 1531
Telegrams: Refinement Calcutta

BOLINJKAR METAL WORKS LTD

Office:
 & Nana Chawk, Grant
 Road

Works: BOMBAY 7

Telephone: 40168

Telegrams: Alligator

BOMBAY STEAM NAVIGATION CO., LTD

*Office: (1) 100, Frere Road
 BOMBAY 9*

*(2) 33, Netaji Subhas
 Road
 CALCUTTA*

*Works: Patent Slip
 MAZAGAON
 BOMBAY 10*

*Telephone: Office: 27543, 33204
 Works: 46084
 (3 lines)*

General Office at

*Calcutta: Cal. 5840
 (3 lines)*

*Shipyard Dept. at
 Cal. 4107*

Telegrams: Shepherd

BRITANNIA ENGINEERING WORKS & FOUNDRY

Office:

& 34/35, Haraganj Road

Works: Salkia, HOWRAH

Telephone: Howrah 585

Telegrams: Metalmart

B—Contd.**BUBNA ENGINEERING CO**

*Office: 105, Cotton Street
 CALCUTTA*

*Works: 188, Manicktolla Main
 Road
 CALCUTTA*

BUNGO STEEL FURNITURE LTD

*Office: 57, Diamond Harbour
 Road
 & Kidderpore*

Works: CALCUTTA

Telephone: South 302

Telegrams: Ognub

BURJORJI PESTONJI & SONS LTD

*Office: Sussex Road
 & Victoria Gardens*

Works: BOMBAY 27

Telephone: 41016

Telegrams: Empress

C**CALCUTTA ELECTRICAL MFG. CO., LTD**

*Office: 33, Netaji Subhas Road
 CALCUTTA*

*Works: 6, Ghore Bibi Lane
 Narkeldanga
 CALCUTTA*

*Telephone: Office: Cal. 4425
 4770, 1888*

Works: B.B. 4794

*Telegrams: Office: Gunship
 Calcutta*

Works: Riento, Cal

G—Contd.

**CALCUTTA EXPANDED
METAL MFG. CO., LTD**

Office: F-16, Kalakar Street
CALCUTTA

Works: 1, Kundan Lane
LILLOOAH

Telephone: *Office:* B.B. 3655

Works: How. 742

Telegrams: Swagal

**CASTINGS CORPORATION
(INDIA) LTD**

Office:

& 45, Madhusudhan Pal
Choudhury Lane

Works: HOWRAH

Telephone: How. 233

Telegrams: Rivetbolts

**CHHUTTAN LALL MATTU
MAL**

Office: Chawri Bazar
DELHI

Works: Shiva Iron & Brass
Works, Gali Lohewali
Chawri Bazar, DELHI

Telephone: 5062

Telegrams: Machinery

**COOPER ENGINEERING
LTD**

Office: Construction House
Ballard Estate
FORT, BOMBAY

Works: Satara Road
DIST. SATARA
M. S. M. Rly

Telephone: 26038 (4 lines)
Bombay

Telegrams: Cooper, Satara
Road
Coopeng, Bombay

D

DELHI IRON SYNDICATE

Office:

& Ajmere Gate

Works: DELHI

Telephone: 5065

Telegrams: Sindiciron

**DEVELOPMENT OF METAL
INDUSTRIES LTD**

Office: 29, Netaji Subhas Road
CALCUTTA

Works: 72-1, Lansdowne Road
CALCUTTA

**DHIRAJ PEN MFG. CO
LTD**

Office: 75, Shamset Street
BOMBAY 2

Works: Kasturchand Mill
Compound
DADAR, BOMBAY

Telegrams: Citypen, Bombay

D. K. DAS & CO., LTD

Office:

& 233, Pelilios Road

Works: HOWRAH

Telephone: How. 970 & 971

Telegrams: Monima, Howrah

D. N. SINGHA & CO., LTD

Office:

&

Works: 61, Sitanath Bose Lane
Salkia
HOWRAH

Telephone: Howrah 348

**DUKHINESWAR SARKAR
& BROS. LTD**

Office: 2, Maharshi Debendra
Road

D—Contd.

Works: (1) P. Mahanta Dargah
Road
CALCUTTA
(2) 2C, Nandan Bagao
Street
CALCUTTA

**DUTTON ENGINEERING
CORPORATION LTD**

Office: 4, Clive Ghat Street
CALCUTTA
Works: 5, Mohindra Chandra
Garden Road
Dum Dum
Ghugudanga
24-PARGANAS

E

**EAST INDIA STEEL
WORKS LTD**

Office: 14, Netaji Subhas Road
CALCUTTA
Works: 74, Hari Mohan Bose
Road
HOWRAH
Telegrams: Kapiem

**ELECTRIC CONSTRUCTION
& EQUIPMENT CO., LTD**

Office: 35, Chittaranjan Avenue
CALCUTTA 12
P. B. 7895
Works: 51/1 & 51/2, Hazra Road
Ballygunge, Calcutta
Telephones: Office: Cal. 1540
Works: P.B. 1514
Telegrams: Bcalco

F—Contd.

**ENGINEERING WORKS LTD
INDIA LTD**

Office: 96, Chowringhee Square
CALCUTTA
Works: 20, Ultadanga Road
CALCUTTA
Telephone: Office: Cal. 2055
Works: B.B. 4534
Telegrams: Engworkcal, Calcutta

F

**FIRESTONE TYRE &
RUBBER CO. OF INDIA
LTD**

Office: Hay Bunder Road
& Seewee
Works: BOMBAY
Telephone: 46005, (5 lines)
Telegrams: Firestone, Bombay

F. N. GOOPTU & CO

Office:
& 12, Beliaghata Road
Works: Calcutta
Telephone: Cal. 2188

G

**GANPATRAY RAMNARAIN
& CO**

Office: 243, Upper Circular
&
Works: CALCUTTA

EXECUTIVE COMMITTEE

1949 - 50

President

Mr. A. K. BHATTACHARYA
National Iron & Steel Co. Ltd. Calcutta

Vice-Presidents

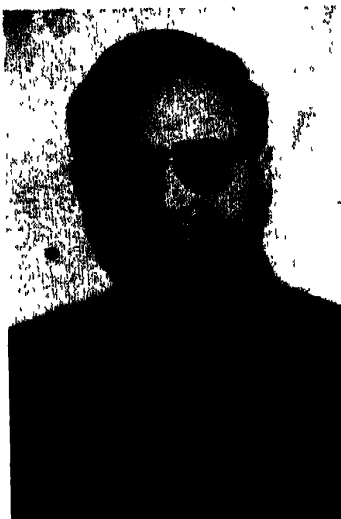
Mr. P. R. BAGRI
Bhartia Electric Steel Co Ltd Calcutta

SETH RATANCHAND HIRACHAND
Indian Hume Pipe Co. Ltd. Bombay

Members

Mr. D. C. DRIVER Tata Iron & Steel Co. Ltd. Calcutta	Mr. R. M. AGRAWAL Mukand Iron & Steel Works Ltd. Bombay
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N. B. *Photographs of those marked with asterisk could not be inserted.



B. OJHA



D. N. JALAN



Dr A H PANDYA



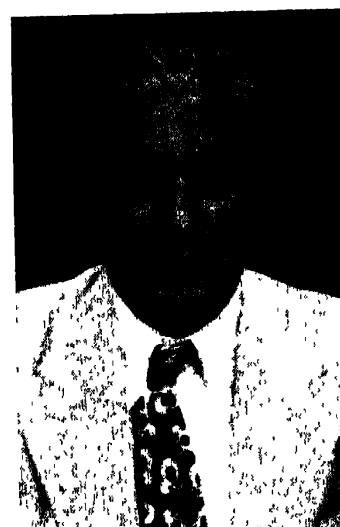
A. K. BHATTACHARYA
President



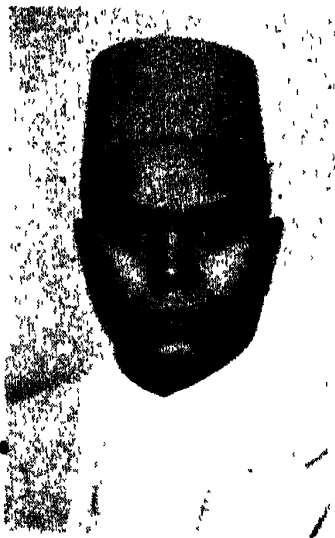
D. C DRIVER



SETH RATANCHAND
HIRACHAND



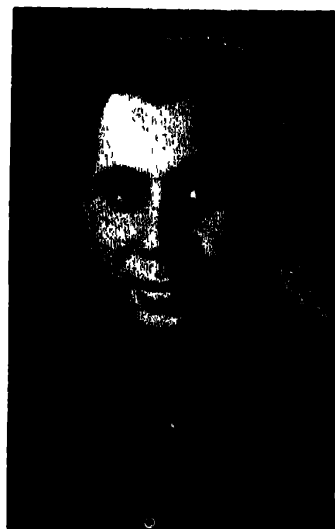
C. D. JHAMB



G. D. BINANI



SIR L. P. MISRA



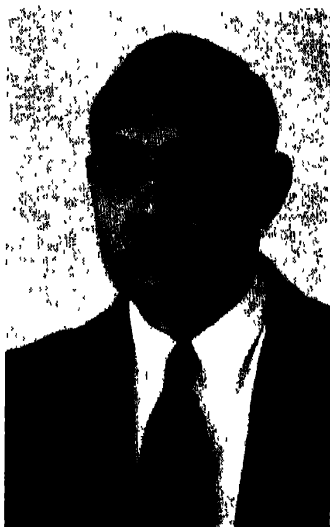
K. J. THIRANI



B. K. ROHATGI



P. R. BAGRI



R. M. AGARWAL



J. P. GOENKA

G—Contd.

GARLICK & COMPANY

Office: Haines Road
& Jacob Circle
Works: BOMBAY, 11
Telephone: 42071 (5 lines)
Telegrams: Garlick, Bombay

**GODREJ & BOYCE MFG
CO. LTD**

Office: Lalbaug
& Parel
Works: BOMBAY, 12
Telephone: 42047 (4 lines)
Telegrams: Godrejsafe
Bombay

GOODMAN & CO

Office: 30, Netaji Subhas Road
CALCUTTA
Works: 44/1, Canal East Road
Manicktolla
CALCUTTA

G. T. R. CO., LTD

Head Office:
& 37, Dum Dum Rd
CALCUTTA
Works:
City Sales Office: 6, Netaji
Subhas Road
CALCUTTA
Telephone: Dum Dum 76
Telegrams: Meridian
Dum Dum

H

**HANUMAN ENGINEERING
WORKS LTD**

Head Office: 20, Baranoshi
Ghose Street,
CALCUTTA

H—Contd.

Works: 287, Grand Trunk
Road
Salkia, HOWRAH

Sales Department: 5, Madan
Chatterjee Lane
CALCUTTA

Telephone: *Office:* B.B. 1364
Works: How. 020

Telegrams: Trial

**HARBANSLAL MALHOTRA
& SONS LTD**

Office: 18, Netaji Subhas Road
CALCUTTA
Works: 16, Dum Dum Road
CALCUTTA

Telephone: *Office:* Cal. 4124
Works: B.B. 0618

Telegrams: Tubjurn

**HAZRA ENGINEERING
WORKS**

Office: 13, Rani Rashmoni Road
CALCUTTA
Works: 67, Narsingh Dutta Rd
HOWRAH

Telephone: *Office:* Cal. 4750
Works: How. 543

**HIND CONSTRUCTIONS
LTD**

Office: 8, Royal Exchange
Place
CALCUTTA

Works: Uttarpara
DIST. HOOGLY

Telephone: *Office:* Cal. 3841
Telegrams: Hindnirman
Calcutta

H—Contd.

HIND CYCLES LTD

Office: Imperial Bank Building
Bank Street, Fort
BOMBAY

Works: 250, Worli
BOMBAY

Telephone: Office: 27046
Works: 42091

Telegrams: Cyclehind, Bombay

HIND MACHINES LTD

Office: 184, Jogendra Nath
& Mukherji Road

Works: Salkia, HOWRAH

Telephone: Office: Cal. 2830
Works: How. 1017

Telegrams: Hindmashin
Calcutta

HIND SCREWS & METAL WORKS

Office:
& Birla Lines, Subzimidai

Works: DELHI

Telephone: 8247

Telegrams: Screw

HIND TANK MFG CO

Office: 6th Kumbharwada Lane
Cooper's Compound
BOMBAY

Telephone: 42429

Telegrams: Indusplant

HINDUSTAN ABRASIVE

Office: C/o. South Bihar Sugar
Mills Ltd

& BIHTA

Works: (E. L. R.)

Telephone: Dinapur 30

Telegrams: Cane'sugar, Bihta

H—Contd.

**HINDUSTAN BICYCLES
& INDUSTRIAL CORPN
LTD**

Office: 9, Netaji Subhas Road
CALCUTTA

Works: Phulwari Shareef
PATNA

Telephone: Office: Cal. 5977
Works: 23 Patna

Telegrams: Ibagencies, Calcutta
Bike., Patna

HINDUSTAN CONSTRUCTION CO., LTD

Office: Construction House
& Ballard Estate

Works: BOMBAY

Telephone: 26036

Telegrams: Hincan

**HINDUSTAN METAL RE-
FINERY & ROLLING
MILLS**

Office: 124, Mint Street
G. T. MADRAS

Works: Tondiarpet
MADRAS

Telephone: 2436

Telegrams: Rollingmill

**HINDUSTAN MOTORS
LTD**

Office: 8, Royal Exchange
Place, CALCUTTA

Works: Uttarpara
DIST. HOOGLY

Telephone: Office: Cal. 562
Works: How. 1271

Telegrams: Hindmotor, Calcutta

H—Contd.

**HINDUSTAN WIRE &
METAL PRODUCTS LTD**

Office: "Stephen House"
4, Dalhousie Square, East
CALCUTTA

Works: Kankinarrah
E. I. RLY

Telephone: *Office:* Cal. 5660
(9 lines)
Works: Bhatpara 32

Telegrams: Expametal, Calcutta

**HOWRAH TRADING
CO., LTD**

Office: 8, Dalhousie Square
East, CALCUTTA

Works: 144-145, Old Ghosery
Road, HOWRAH

Telephone: *Office:* B.B. 4492
Works: Howrah 459

Telegrams: Sooratrade

I

**INDIA AMMUNITION
SYNDICATE LTD**

Office:
& Millerganj

Works: LUDHIANA

**INDIA CYCLE MFG. CO
LTD**

Office: 4, Clive Ghat Street
CALCUTTA

Works: 9, Tiljala Road
P. O. Park Circus
CALCUTTA

Telephone: Cal. 6955 & 6946
Works: Pk. 2235

Telegrams: Indcycle

I—Contd.

**INDIA ELECTRIC WORKS
LTD.**

Office: Diamond Harbour Road
Behala
24-PARGANAS

Works: (1) Diamond Harbour
Road, Behala
24-PARGANAS

(2) 25, South Road
Entally
CALCUTTA

Telephone: *Office:* South 2620
Works: South 2621
& Pk. 46

Telegrams: Manufacturer
Behala

**INDIA MACHINERY CO
LTD**

Office: 29, Strand Road
CALCUTTA

Works: Dasnagar
HOWRAH

Telephone: *Office:* Cal. 3385
Works: How. 532
& 565

Telegrams: Atlawbriz

**INDIAN CLOCK MFG. CO
LTD**

Office: Sunder Nagar
Via. TATANAGAR
(RLY. STATION)

Works: Main Road
JAMSHEDPUR

Telephone: 86 A
Telegrams: Sunderdasco

**INDIAN COMMERCE &
INDUSTRIES CO., LTD**

Office: 95, Broadway
MADRAS

I—Contd.

Works: Beehive Foundry
Engineering Works
95, Broadway
MADRAS

Telephone: 2020

Telegrams: Lucky

**INDIAN ENAMEL WORKS
LTD**

Office: Great Social Blds
Sir Pherozshah Mehta
Road, Fort
BOMBAY

Works: Kasturchand Mills
Compound
DADDAR (B. B. C. I.)

Telephone: Office: 30964
& 30965

Works: 60637

Telegrams: Ojas, Bombay

**INDIAN ENGINEERS'
CORPN., LTD**

Office: P. O. Box No. 8
& Outside Chatiwind Gate

Works: Canal Bank
AMRITSAR

Telegrams: Indengico

**INDIAN EXPANDED
METALS LTD**

Office: Prospect Chambers
Hornby Road
BOMBAY

Works: Sewree Fort Road
BOMBAY 15

Telephone: Office: 30167
Works: 60445

Telegrams: Office: Bhagatson
Bombay

Works: Expeeyam
Bombay

I—Contd.

**INDIAN HUME PIPE
CO., LTD**

Office: Construction House
Ballard Estate
BOMBAY

Works: All Over India

Telephone: 32894

Telegrams: Humepipe, Bombay

**INDIAN MALLEABLE
CASTINGS LTD**

Office: 4, Clive Ghat Street
CALCUTTA

Works: 44, Mohesh Mukherjee
Road, BELGHORIA
24-PARGANAS

Telephone: Office: Cal. 3594
Works: B.B. 5322

Telegrams: Inmalca, Calcutta

**INDIAN SMELTING &
REFINING CO., LTD**

Office: Shale Building
Bank Street
FORT, BOMBAY

Works: 101, Sion Road, Sion
BOMBAY

Telephone: Office: 32831 (2 lines)
Works: 60873

Telegrams: Isarc, Bombay

**INDIAN STANDARD
METAL CO., LTD**

Office:
& Chinchpokli Cross Lane

Works: BOMBAY 27

Telephone: 43018

Telegrams: Ismetco

I—Contd.**INDIAN STEEL & WIRE PRODUCTS LTD**

Office: 7, Wellesley Place
CALCUTTA

Works: P. O. E. I. R. Works
(Singhbhum)
TATANAGAR
(B. N. RLY.)

Telephone: *Office:* Cal. 4317
Works: Jamshedpur 18

Telegrams: Wireforms

INDIAN TOOL MANUFACTURERS LTD

Office: 250, Worli
BOMBAY

Works: 101, Sion Road, Sion
BOMBAY

Telephone: 42091
Telegrams: Itools

INVESTA MACHINE TOOLS & ENGINEERING COMPANY LTD

Office: Ewart House
Bruce Street
FORT, BOMBAY

Works: Clerk Road
Pais Street
BOMBAY 11

Telephone: *Office:* 26081 & 26082
Works: 42004 & 42005

Telegrams: *Office:* Inmactools
Works: Vestatools

J**JAIPUR METAL INDUSTRIES LTD**

Office: Jaipur, Near Railway
Station, (RAJPUTANA)

J—Contd.

Works: Near Railway Station
JAIPUR

Telephone: 172

Telegrams: Metals

JAGATJIT ENGINEERING WORKS

Office: Opposite Railway Station
& KAPURTHALA

Works: (E. P. R.)

Telephone: 25

Telegrams: Jagworks

JAMNADAS BROTHERS

Office: 69/1, Canning Street
CALCUTTA

Temp. Add

195/1, Harrison Road
CALCUTTA

Telephone: Howrah 403

Telegrams: Pooradam

JAMSHEDPUR ENGINEERING & MACHINE MFG CO., LTD

Office: P. O. Telco Works
& TATANAGAR

Works: (B. N. RLY.)

Cal. Office: 7, Wellesley Place
CALCUTTA

Telephone: 276 Jamshedpur

Telegrams: Jemco, Tatañagar

JAS. ALEXANDER & CO LTD

Office: 8, Dalhousie Square
East, CALCUTTA

Works: 15, Watgunge Street
Kidderpore
CALCUTTA

Telephone: *Office:* Cal. 2879

Works: South 1401
& 1402

Telegrams: Jasalex

J—Contd.**JAYANT METAL MFG. CO**

Office: 152, Lohar Chawl
BOMBAY
17, Tara Chand Dutt
Street, CALCUTTA
Works: Chinchpokli
BOMBAY

Telephone: Office: 23919
Works: 42321
Cal. Office:
B.B. 6449

Telegrams: Jayantbabu

**JAY ENGINEERING
WORKS LTD**

Office: 183/A, Prince Anwar-
Shah Road
& P. O. Dhakuria
Works: CALCUTTA
Telephone: South 2020
Telegrams: Ushako, Calcutta

JEEWANLAL (1929) LTD

Office: 101, Netaji Subhas Road
CALCUTTA
Works: 95, Grand Trunk Road
Belur, HOWRAH
Telephone: Office: Cal. 3323
(3 lines)
Works: How. 515
Telegrams: Crownaluco
Mantalumin

**J. K. IRON & STEEL
CO., LTD**

Office: Kamla Tower
KANPUR
Works: Kalpi Road
KANPUR
Telephone: Office: 2532/33/34
36 Extension No. 9
Works: 2887
Telegrams: Steel, Kanpur

J—Contd.**JOGENDRA NATH
CHATTERJI & SONS**

Office: 21, Maharshi Devendra
Road, CALCUTTA 7
Works: 18, Chatterjee Para Lane
HOWRAH

JYOTI LTD

Office: Post: Chemical
Industries

&

Works: BARODA

Telephone: 287

Telegrams: Jyot

K**KAMANI ENGINEERING
CORPORATION LTD**

Office: Kamani Chambers
& Nicol Road, Ballard
Works: Estate, BOMBAY

**KAMANI METALS &
ALLOYS LTD**

Office: Kamani Chambers
Nicol Road, Ballard
Estate, BOMBAY
Works: Agra Road, Kuria
(BOMBAY)
Telephone: 87156
Telegrams: Alloys

~~K-Contd.~~**KAPURTHALA
INDUSTRIES LTD.**

Office: Post Bbx 281.
Amrit Lal Asand Lane
Mutiny Memorial Road
Motia Khan.
NEW DELHI

Works: (1) Paramjit Ganj
KAPURTHALA
(2) Kalyan
BOMBAY

Telegrams: Office: Panelpins
New Delhi
Works: Panelpins
Kapurthala, &
Bombay

**KAYCEE INDUSTRIES
LTD**

Office: Kamani Chambers
Nicol Road
Ballard Estate
P. O. Box No. 699
BOMBAY

Works: LAHORE, POONA
&
BOMBAY

Telephone: 25714
Telegrams: Kayce

**KHEM CHAND RAJ
KUMAR**

Office: Tanda Road
&
Works: JULLUNDER CITY
Telephone: 295 & 295A
Telegrams: Rajkumar
Jullunder City

KIRLOSKAR BROS., LTD

Office:
& Kirtoskarvadi
Works: DIST. SATARA
Telegrams: Kirloskar

~~K-Contd.~~**KRISHNALAL THIRANI &
CO., LTD**

Office: 8, Royal Exchange Place
CALCUTTA

Works: 46, Barrackpore Trunk
Road
P. O. Belgharia.
DIST. 24-PARGANAS

Telephone: Office: Cal. 4657
Works: B.B. 3081

Telegrams: Thiranico

**KUSHUMIKA IRON
WORKS LTD**

Office: 3, Maharshi Devendra
Road
CALCUTTA

Works: 70/73, Jeliapara Lane
Salkia
HOWRAH

Telephone: Office: B.B. 4541
Works: Howrah 261

Telegrams: Feracier

L**LALLUBHAI AMINCHAND**

Office: 554, Kansara Chawl.
P. O. Box No. 2100
BOMBAY

Works: The Dun Aluminium
Factory
225, Tardeo Road,
BOMBAY 7

**LEIPZIG CHEMICAL &
ENGINEERING WORKS**

Office: 38, Netaji Subhas Road
CALCUTTA

L—Contd.

Works: 12 & 13, Pran Krishna
Mukherjee Road
CALCUTTA

Telephone: Works: B.B. 4745

Telegrams: Hundal, Calcutta

LILUAH IRON WORKS

Office: Guha Park
& Liluah

Works: HOWRAH

Telephone: Howrah 747

Telegrams: Liluah Ironworks

**LUDHIANA STEEL ROLL-
ING MILLS**

Office:
& Millerganj

Works: LUDHIANA

Telephone: 37

M**MACHINE MFG. CO., LTD**

Office: Station Road
& Lilloah, (E. I. R.)

Works: HOWRAH

Telephone: Howrah 477

**MADRAS ENAMEL WORK
LTD**

Office: 65, Sydenhams Road
& G. T.

Works: MADRAS

Telephone: 2646

Telegrams: Enamelsign

M—Contd.**MALLEABLE IRON &
STEEL CASTINGS LTD**

Office: 5F, Apollo Street
BOMBAY

Works: Matheradas Mills
Compound
Lower Parel
BOMBAY

MAPARA PAREKH & CO

Office: Ghodbunder Road
& Santakruz

Works: P. O. Juhu
BOMBAY 25

**MATCHWEL ELECTRICALS
(INDIA) LTD**

Office:
& Subzi Mandi

Works: DELHI

Telephone: 6472

Telegrams: Matchwel, Delhi

**METAL PRESS WORKS
LTD**

Office: 156, Victoria Road
& P. O. Baranagar

Works: 24-PARGANAS

**METAL SPRAYING
PRODUCTS**

Office: 72/73, Old China Bazar
CALCUTTA

Works: 4, Howrah Road
HOWRAH

Telephone: Pk. 4150

Telegrams: Metspray

METROPOLE WORKS

Office:
& P. O. Verka

Works: (AMRITSAR)

Telephone: 743

Telegrams: Metropole, Amritsar

M—Contd.**MOTOR HOUSE (GUJERAT) LTD**

Office: Haroon House
Bazar Gate Street
P. O. Box No. 1068
BOMBAY 1

Works: Bombay Agra Road
BHANDUP, (G. I. P.)

MUKAND IRON & STEEL WORKS LTD

Office:
& Signal Hill Avenue

Works: BOMBAY, 15

Telephone: 46041 (2 lines)

Telegrams: Steel, Bombay

MYSORE IRON & STEEL WORKS

Office:
& Bhadravati

Works: SOUTH INDIA

Telegrams: Mysiron

MYSORE KIRLOSKAR LTD

Office:
& Harihar

Works: MYSORE STATE

MYSORE PREMIER METAL FACTORY

Office: 124, Mint Road
G. T. MADRAS

Works: Tondiarpet
MADRAS

Telephone: 2535

Telegrams: Sunbrand

N**NATH MALL GIRDHARI LAL**

Office: 22, Burtolla Street
CALCUTTA

N—Contd.

Works: 108, Benares Road
HOWRAH

NATIONAL BEARING CO., LTD

Office: 1/A, Vansittart Row
CALCUTTA

Works: Jaipur
(RAJPUTANA)

NATIONAL INSULATED CABLE CO., OF INDIA LTD

Office: "Stephen House"
4, Dalhousie Square
East, CALCUTTA

Works: Mulajore, Via
Shamnagar
24-PARGANAS
West Bengal
E. I. RLY

Telephone: Office: Cal. 5660
(9 lines)

Works: Bhatpara 33

Telegrams: Megohm
Calcutta.

NATIONAL IRON & STEEL CO., LTD

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Works: How. 670
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Telegrams: Niscoworks
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Works: 1, Bagzala Road
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Telephone: *Office:* Cal. 6476 &
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Works: Dum Dum 5

Telegrams: Nametal, Calcutta

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Works: Mulajore, Via Shamnagar
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Works: 42587 &
61275

Telegrams: Coopcomp

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& Ogalevadi

Works: Dist. SATARA

Telegrams: 'Glasworks'
Ogalevadi

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CALCUTTA

Works: Jugsalai TATANAGAR
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10/5, Sitanath Bose Lane
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Telephone: *Office:* B.B. 2104
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&

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Works: PATNA CITY

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Works: BOMBAY 15

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Works: Agra Road
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Works: Premobiles
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R**RADHA GOVIND INDUS-
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Works: SHIKOHABAD
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Telegrams: Raghuworks

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Branch: 10, Canning Street
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Telegrams: Tejstramer

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Works: 8, Station Road
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Works: How. 934

Telegrams: Ironclad Calcutta

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Cal. Office: 161-1, Harrison Road
CALCUTTA

Works: (1) Sadar Bazar
MEERUT

(2) Hazra Road
CALCUTTA

Telephone: Hd. Office: Meerut

262

Cal. Office:

B.B. 5388

South 1951

Telegrams: Metal, Meerut

Tambapital, Calcutta

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TION CO., LTD**

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Works: Gandhigram
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119, Vizagapatam
30075 (6 lines)
Bombay
Telegrams: Shilpi, Vizagapatam
Jalanath, Bombay

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Telegrams: Seworks

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Works: BOMBAY
Telephone: 61275
60897
Telegrams: Shaparia

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Works: Ghosury
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Works: How. 45
Telegrams: Sooratrade

S—Contd.**SHREE JAM WIRE PRODUCTS CO., LTD**

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Sir Pheroazshah Mehta
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BOMBAY
Works: JAMNAGAR
Telegrams: Jamwire

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Works: (1) 1/1, Kishandayal
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CALCUTTA
Works: 12/13, Chackpara Road
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Telegrams: Swagat, Calcutta

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Works: LILLOOAH*Telephone:* Howrah 289*Telegrams:* Prithwipat*Lillooah***STAR METAL REFINERY***Office:* 361, Hornby Road
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Telegrams: Tatalco
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Works: Burrabazar Calcutta

Telephone: B.B. 5074

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Works: BOMBAY 18
Telephone: 45520
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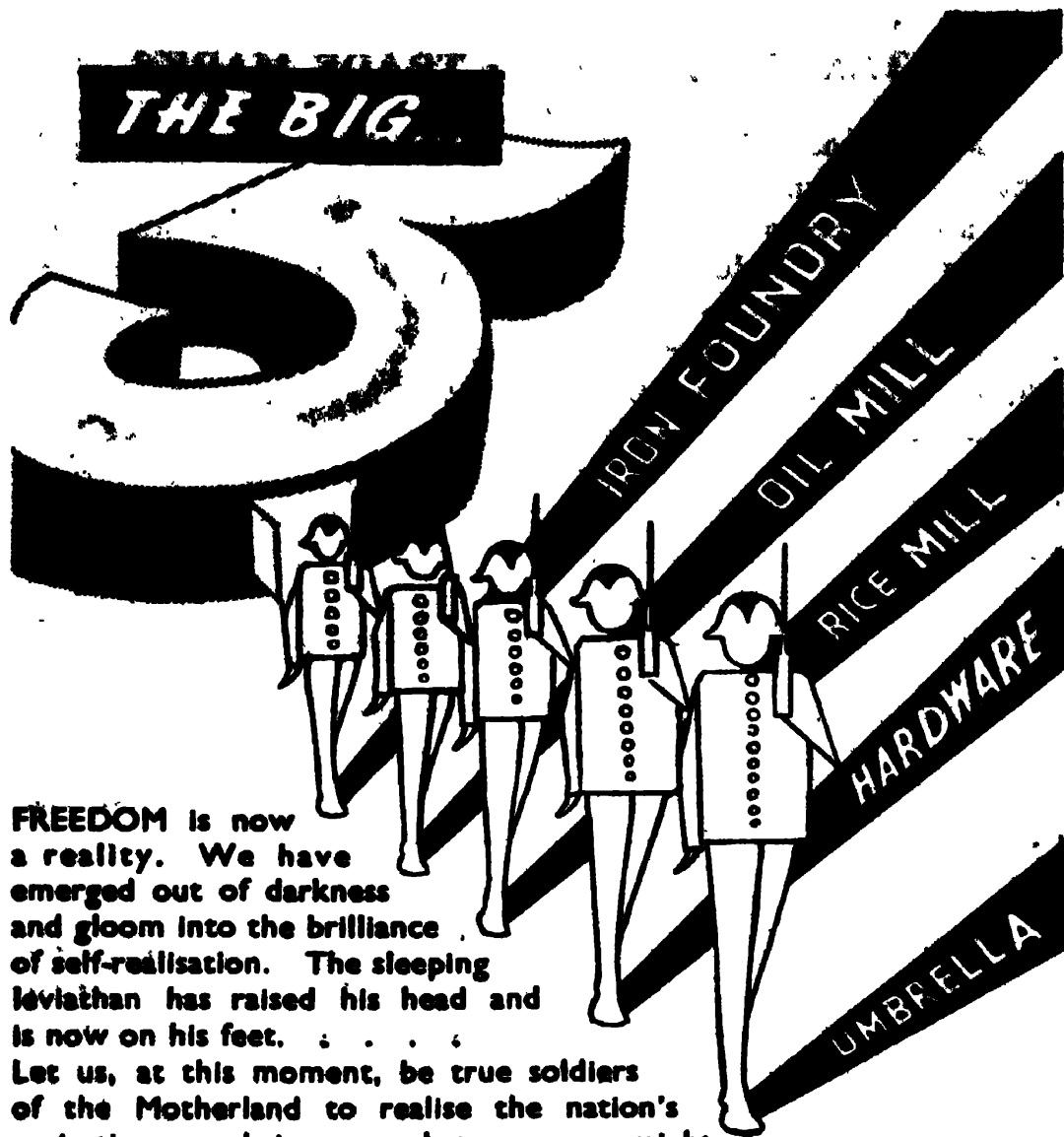
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VICTOR INDUSTRIES

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Works: CALCUTTA
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Let us, at this moment, be true soldiers of the Motherland to realise the nation's aspirations, and impart whatever our might to the common pool for the glory and brilliance of our heritage. . . .

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ATTA'S PURE OIL MILL. 20, Benares Road, Salkia.
BHOYDHARPARA RICE MILL. Nadanghat, Burdwan.
NAFAR CH. ATTA (UMBRELLA)
 126B, Old China Bazar St.
PANNALALL ATTA (DO RETAIL)
 180, Old China Bazar St.
BISNU P. ATTA (HARDWARE)
 213, Harrison Road.
MOTILAL ATTA (HARDWARE)
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ATTA'S
Enterprises



PATENTS, DESIGNS & TRADE MARKS

The commercial value of any industrial product depends upon a large number of factors, such as utility, cost of production, attractiveness of appearance, and the reputation established for it in trade. Industrialists, therefore, make constant efforts to utilize these factors to gain competitive advantage over their rivals. Advantages in respect of utility and cost of production may be gained by the adoption of "inventions" leading to a new manner of manufacture; advantage in respect of attractiveness of appearance may be secured by the adoption of new or original "designs" for the shape, configuration or ornamentation of the vendible product; and advantage as regards reputation in the course of trade may be gained by adopting and popularising a suitable "Trade Mark" for marketing the product.

A recognition of the importance of the rights in respect of the use of inventions, designs and trade marks, collectively referred to as rights of 'Industrial Property' has led to the enactment of special legislation for the protection and recognition of such rights.

In British India, *protection of "inventions"* is secured by obtaining a Patent, grant of which is governed by the Indian Patents and Designs Act, 1911, as amended from time to time, the Indian Patents and Designs (Extension of Time) Act, 1942 (as amended by Ordinance No. VII of 1947), and by the Rules made under the said Act of 1911. *Protection of new or original "designs"* is secured by the Registration of the Design, under Part II of the same Act; and *protection in respect of "Trade Marks"* is secured by the Trade Marks Act, 1940.

Patent Office Handbook.—For the convenience of inventors and applicants for the grant of patents and for the registration of designs, detailed instructions, the text of the Act and of the Rules incorporating the provisions of the up-to-date amending Acts, Orders and Notifications are contained in a book entitled "Patent Office Handbook" which is available from the Manager of Publications, Civil Lines, Delhi, at a cost of Re. 1/- per copy. The book also contains a chapter giving important decisions of the Courts, the Central Government and the Controller of Patents

and Designs which are very useful in interpreting the provisions of the Act.

Before 1856, there was no legislative enactment for the protection of Industrial Inventions or Designs in India. The first legislation for the purpose of conferring certain exclusive privileges for the "encouragement of inventions of new manufactures" was made in 1856, after an agitation of several years. Since then there have been a number of additions and modifications, repeals and replacements and the latest Act which is currently operative is the one aforesaid 'Indian Patents and Designs Act, 1911,' as amended from time to time.

What is Patent.—A patent is a Grant from the Government which confers on the grantee, for a limited term, the exclusive privilege of making, selling, and using an 'invention' and also of authorising others to do so. It is granted in exchange for the disclosure of an invention. A patent is not in the nature of a certificate endorsing the utility claimed for the invention, in respect of which it is granted.

Pitfalls to be avoided.—(a) It is a common experience that through ignorance of patent law, inventors act indiscreetly and jeopardize the chance of obtaining valid patents for their inventions. The most common of these indiscretions is to publish inventions in newspapers or scientific and technical journals, before applying for patents. As the law stands at present, publication of an invention, even by the inventor himself, would (except under certain rare circumstances) constitute a bar for the subsequent patenting of it. Similarly, the use of the invention in public, or the commercial use of the invention in public or in secrecy, prior to the date of the patent, would be a fatal objection to the grant of a valid patent for such invention thereafter. Hence, inventors should not tell the world about their inventions before they apply for patents; nor should they use their inventions for commercial purposes. There is, however, no objection to the secret working of the invention by way of reasonable trial or experiment, or to the disclosure of the invention to others confidentially.

(b) Another mistake which is frequently made by inventors is to wait until their inventions are fully developed for commercial working, before applying for patents. Delay in making applica-

tion for a patent involves risks, namely, (i) that other inventors might forestall the first inventor in applying for the patent, and that (ii) there might be either an inadvertent publication of the invention by the inventor himself, or the publication thereof by others independently of him. It is, therefore, advisable to apply for a patent as soon as the inventor's idea of the nature of the invention has taken a definite shape.

In this connection inventors should note that it is now permissible to file an application for a patent accompanied by a "Provisional Specification," describing merely the nature of the invention. The application may, therefore, be made even before the full details of working the invention are developed. The filing of an application for a patent disclosing merely the nature of the invention would secure "provisional protection," and thereby enable the inventor to work out the practical details of the invention under protection.

(c) Another matter which should not be neglected by inventors is the clarification of their rights with reference to those of their employers, co-workers, contractors and assistants, if any, with whom they are brought into contact in the course of the development of their inventions. Neglect in this direction may not only lead to costly litigation, but also render the patent invalid.

Term of Patent.—The normal term of a Patent in British India is 16 years. But in exceptional cases this term can be extended by a maximum of ten years. For the first four years of the term of a patent no fees are required to be paid for its continuance; thereafter the continuance of all patents other than a secret patent or a patent of addition, is subject to the payment of an annual renewal fee.

What may be patented.—A patent may be granted for an 'invention', which is defined as any manner of new manufacture and includes an improvement and an alleged invention. In other words, to be patentable an invention must be a *manufacture*; it must be new; it must be useful, and it must not be such as may be said to be obvious to a person skilled in the art to which the invention relates and acquainted with the common knowledge in that art at the time of applying for the patent. The word

'**manufacture**' includes any process, apparatus, device, machine, article, or composition of matter.

A plan of campaign in warfare of business, or the discovery of a hitherto unknown natural law is not patentable. Similarly, a game of chance or skill which does not require new means for playing it, or a method of calculation or a new notation for writing music, a new method of curing diseases, natural substances suitable for food, cannot be classed as 'manufactures,' and are therefore not patentable.

New methods of using well-known apparatus may also be patented, provided the *new* methods result in unforeseen technical advantages. *New* compositions of matter may also be patented if their properties would not be deducible from known properties of their constituent substances.

In the case of chemical inventions, it should be noted that the article or substance which is produced may be old, but if the mode of producing it is new, the process will be patentable.

Who may obtain a patent and how.—Any person in possession of an invention may obtain a patent. Application for a patent should be made to the Controller of Patents and Designs and filed at the Patent Office at 214, Lower Circular Road, Calcutta. The applicant himself need not be the inventor, but the name of the inventor has to be disclosed. The application should be accompanied by either a Provisional specification or a Complete specification within nine months from the date of the application.

All applications for patents and the specifications in respect thereof are examined by the Patent Office and after their acceptance are advertised in the Gazette of India, Part II, Section I, so as to enable interested parties to oppose the grant of patents.

Secret Patents.—Inventors of instruments or munitions of war may assign their inventions to the Central Government and obtain 'secret' patents therefor. No fees are payable in respect of 'secret' patents.

Patents of additions.—Improvements on an existing patent may be protected by 'patents of addition,' for which no renewal

fee need be paid, but which would ordinarily remain in force only so long as the main patent is in force.

After a patent is obtained, the patentee may either sell the patent outright or may grant licences for its exploitation or he may work the patent himself.

If, during the continuance of a patent, any person makes, sells, or uses the invention without obtaining a licence from the patentee, or counterfeits it or imitates it, the patentee may institute a suit for infringement against the said person.

The defendant in an infringement suit may counter-claim revocation of the patent. A patent worked wholly outside India may also be revoked by the Central Government.

Designs.

For the purpose of the Indian Patents and Designs Act, 1911, a 'Design' means the features of shape, configuration pattern or ornament applied to any article by an industrial process or means, whether manual, mechanical or chemical, separate or combined, which in the finished article appeal to and are judged solely by the eye, but does not include any mode or principle of construction or anything which is in substance a mere mechanical device and does not include any trade mark or property mark. Literary or artistic creations such as books, pictures, and music, which fall under the Indian Copyright Act (Act III of 1914) do not also come within the scope of the Indian Patents and Designs Act.

A design to be registerable must be *new or original* and must be applicable to an *article*. The original registration remains in force for five years, but the period can be extended upto fifteen years in all.

During the existence of copyright in a registered design, the unauthorised application of the design to the article in question for purpose of sale is prohibited. The penalty for each infringement is a sum not exceeding five hundred rupees recoverable as a contract debt; the proprietor may, in the alternative, elect to bring a suit for the recovery of damages and for an injunction against the repetition of the infringement, in which case the infringer is liable to pay such damages as may be awarded. By a recent amendment of section 18 of the Indian Sea Customs Act,

the importation into India of goods bearing a pirated design can be stopped.

Trade Marks.

The Trade Marks Act, 1940 (Act V of 1940), was passed by the Indian Legislature in March, 1940, to provide for the registration and more effective protection of trade marks in British India. Sections 1 and 85 of the Act came into force at once, and under the latter section, intending applicants for registration were enabled to deposit their trade marks. About 1,58,000 trade marks were so deposited, which were since classified and indexed.

Before the other provisions of the Act could be brought into force the Act was amended in 1941 (Act XXVII of 1941) to establish a separate Trade Marks Registry at Bombay under a Bombay Registrar with jurisdiction over textile marks only. The amended Act came into force on the 1st June, 1942, but had again to be amended by the Trade Marks Amendment Act, 1943. The Act was further amended in April 1946 (Act XII of 1946) with a view to avoiding conflict of registration in various Indian States who have either passed Trade Marks Act of their own or proposed to do so in the near future, and also to make trade marks registered in any territory effective in all territories in India, in which trade marks legislation has been enacted.

Infringement actions of trade marks and certification of trade marks registered in British India can accordingly be filed in any of the reciprocating Indian States thus making it unnecessary for the proprietor of a trade mark to register a trade mark more than once in India. The Trade Marks Register is kept at the Registry at Bombay under the control and management of the Registrar of Trade Marks.

A branch of the Trade Marks Registry is established at Calcutta, at which a copy of the Register and the Refused Textile Marks List are kept. The Branch Registry is under the charge of the Deputy Registrar who is empowered to discharge, under the superintendence and direction of the Registrar, any function which may be discharged by the Registrar.

Summary of the Important Provisions of the Trade Marks Act, 1940.—A "mark" includes a device, brand, heading, label, ticket, name, signature, word, letter or numeral or any

combination thereof; a "trade mark" means a mark used or proposed to be used in relation to goods for the purpose of indicating or so as to indicate a connection in the course of trade between the goods and some person having the right to use the mark. A trade mark may be registered only in respect of particular goods or classes of goods. Any person who is desirous of registering a mark should apply to the Registrar in the prescribed manner. The application may be made either at the Registry at Bombay or at the branch office at Calcutta.

Distinctiveness is the prime requisite of a trade mark for registration. A registrable trade mark must consist of or contain at least one of the following essential particulars : (1) name of a company or individual represented in a special or particular manner, (2) signature of the applicant or some predecessor in business, (3) one or more invented words, (4) word or words having no direct reference to the character or quality of the goods and not being according to its ordinary meaning a geographical name or surname or the name of a sect, caste or tribe in India and (5) any distinctive mark. A mark consisting of a name, signature, or any word other than such as fall within the above description is not registrable except upon evidence of distinctiveness. In determining whether a trade mark is distinctive the extent of the inherent distinctiveness of the mark, as well as its acquired distinctiveness by use or otherwise, will be considered. The commonly accepted name of any single chemical element or chemical compound is not registrable in respect of a chemical substance or preparation. Trade marks which are contrary to law or morality, or disentitled to protection in a Court of Law by being likely to deceive or cause confusion, or which are likely to hurt religious susceptibilities, are not registrable. The Act contains also special provisions for the registration of certification trade marks, and for defensive registration.

When an application for registration has been accepted subject to such conditions, if any, as the Registrar might think fit to impose, the Registrar shall cause the application advertised accordingly. Any person may in the prescribed manner oppose an application so advertised within 4 months, and after hearing the parties, the Registrar will decide whether registration is to be permitted. The date of registration of an application shall be the date of filing such application in the Registry.

The registration of a mark will be in force for 7 years in the first instance, after which it may be renewed for a period of 7 years. In all legal proceedings relating to a registered trade mark, the fact of registration shall be *prima facie* evidence of validity of the registration and of all subsequent assignments and transmissions. Further, after seven years from the date of registration, the validity of the original registration cannot be questioned except on grounds of fraud or deception or unless the mark offends against section 8.

The registered proprietor of a trade mark is entitled to an action for infringement under the Act. This valuable right is extended to owners of "old" marks, who had applied for registration of their trade marks within five years from commencement of the Act and registration of which has been refused by the Registrar. The rights of action to passing off are not affected by registration, and are expressly preserved under the Act. Registration gives to the registered proprietor the exclusive right to the use of the trade mark in relation to the goods for which the mark is registered. Where a mark is already registered by one person, the same or nearly similar mark cannot be registered by another person.

The proprietor of a registered trade mark has power to assign the mark, and may assign it whether in connection with the goodwill of the business or not. A registered proprietor may also assign an unregistered trade mark without the goodwill of the business along with a registered trade mark under certain circumstances. Any assignment made without the goodwill of the business must be advertised as directed by the Registrar.

A person other than the proprietor of a mark may be registered as a registered user, on application being made both by the proprietor and such person to the Registrar in the prescribed manner, accompanied by particulars relating to their relationship, the control of the one over the other, and other facts relevant to the "permitted" use. The registered user may under certain circumstances file an action for infringement in his own name as if he were the proprietor, but cannot assign or transmit the mark.

Any person aggrieved by the presence of a mark or entry on the Register may apply in the prescribed manner to the

Registrar or to a High Court for rectification of the Register. The registered proprietor may apply to the Registrar for correction or cancellation of any entry in the Register, relating to his trade mark. He may also apply for alteration of the registered mark in any manner not substantially affecting its identity.

With effect from the 1st January, 1947, it has been declared an offence to describe a trade mark as registered when it is not so registered. The use of the word 'Registered,' however, is permissible if it is clearly indicated that the reference is to registration of the mark under the law of a country outside British India or if the word is used solely in relation to goods to be exported to a foreign country, where the mark is registered. Declaration of ownership of a trade mark under the Indian Registration Act of 1908 is not equivalent to registration under the Trade Marks Act, 1940, and the use of the word "registered" to signify registration of declaration of ownership is therefore an offence with effect from the aforesaid date. The use of Royal Arms, Heraldic devices, and State emblems without due authority may be restrained by injunction from the Registrar or at the suit of any other person who is duly authorised to use such Arms, etc., but the rights to their use acquired before the coming into force of the Act, are not affected.

All appeals from the decisions of the Registrar lie to the High Court.

There are also special provisions for registration of textile trade marks and for the constitution of an Advisory Committee to advise the Registrar with respect to usages of the textile trade.

The criminal law relating to the registration of trade marks is contained in the Merchandise Marks Act (IV of 1889), which has recently been amended. Section 3 of this Act enacts sections 478—489 of Chapter XVIII of the Indian Penal Code.

A JOB TO BE HANDLED WELL



SHOULD BE LEFT WITH THOSE WHO KNOW THEIR JOB WELL

From the construction of Bridges and Cranes and installation of Plants and Machinery, involving every kind of mechanical and structural engineering skill, we do every thing satisfactorily. We do so for the simple reason that we know the job and we have been doing it efficiently for the last 35 years. We are fully equipped and we have the men to do it.



J. A. ALEXANDER & CO. LTD.
MECHANICAL AND STRUCTURAL ENGINEERS
Office: 8, Dalhousie Square, Calcutta.
Phone: Cal 2871 (8 lines) Gram Jasalex
Factory: 15, Watgunge Street. Phone: South 1401

Engineering Association of India

BRANDS AND TRADE MARKS

Complete Addresses of Manufacturers and Producers will be found on Pages 11 to 32

BRANDS & TRADE MARKS

APPLICATIONS

FIRM OR COMPANY

(44)

Antifriction Bearing Metals.

INDIAN STANDARD METAL
CO., LTD., BOMBAY.

Sanitary Fittings, Water Fittings, Gun
Metal, Iron Chains.

AMIN CHAND BHOLANATH,
JULLUNDER CITY.

Antifriction Bearing Metals (White Metal).

INDIAN STANDARD METAL
CO., LTD., BOMBAY.

Agricultural Implements.

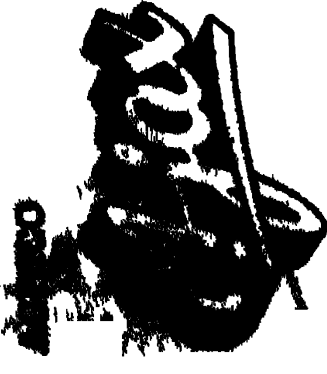
TATA IRON & STEEL CO.,
LTD., CALCUTTA.

Steel Furniture of all kinds, Filing cabinets,
Card Index Cabinets, Security Cabinets
and other cabinets, safes, strong room
doors, racks of all types, cash boxes,
hospital furnitures, locks etc.

AJAX PRODUCTS LTD,
MADRAS.

A.C.B.N.

AN AERODIESEL





**AJAX PRODUCTS LTD.,
MADRAS.**

Abrasive preparations. Abrasive Papers cloths, belts, discs, tapes etc. made from abrasive material such as emery, garnet, quartz, corundum ajaxite, silcarb, Optical Fines and abrasive wheels and grinding machines.

ANAND

Steel Cabiret, Furniture of all types including Hospital beds and steel equipment.

**ANAND METAL & STEEL
WORKS C/O. ANAND
RAM MAHADEO LAL,
CALCUTTA.**

ANAND

**A
N**

ANAND

**N
D**

Non Capacitor De Luxe A. C. Fans.

**MATCHWEL ELECTRICALS
(INDIA) LTD., DELHI.**

Wire products.

**KAPURTHALA INDUSTRIES
LTD., KAPURTHALA.
(PB).**



Brass & G. M. Fittings, Bolts & Nuts,
Chaff Cutter Machines and blades.

**AMIN CHAND PAYARE LAL,
JULLUNDER CITY.**

BRANDS & TRADE MARKS	APPLICATIONS	FIRM OR COMPANY
'ASIA TOKA'	Chaff Cutter.	AGRICULTURAL INDUSTRIES (RGTD.), BATALA (PB)
AZAD	D. C. Fans.	MATCHWEL ELECTRICALS (INDIA) LTD., DELHI.
'B.M.'	Antifriction Bearing Metals.	INDIAN STANDARD METAL CO., LTD., BOMBAY.
'BAJU'	All kinds of small cutting tools, jigs, fixtures and Dies & Punches.	BHARAT TOOL MFG., CO., LTD., BOMBAY.
B.B. W.	Beltings of all types.	BENGAL BELTING WORKS LTD., CALCUTTA.
BENGAL	Electric Lamps.	BENGAL ELECTRIC LAMP WORKS LTD., CALCUTTA.
BHAI	Electrical Accessories, Electrical Appliances (Household), Electric Fans and regulators, Electric Pole Fittings, Railway Stores.	B. M. SINGH & SON, CALCUTTA.
BHARAT	Electric Fans.	INDIA ELECTRIC WORKS LTD., CALCUTTA.
BHOLA	Locks.	AMIN CHAND BHOLANATH, JULLUNDER CITY.



B.M.W.

**M.
CALCUTTA
L.**



BUNGO

CALEDON

**BINDESHVARI IRON AND
STEEL CORPORATION,
CALCUTTA.**

Agricultural Implements, Consumers' Goods,
Sugar Cane Crushers, Weights, Railings,
Oil Mill Jut and Pipes and Machine Parts.

**BINANI METAL WORKS
LTD., CALCUTTA.**

Anti-friction white metals, Tin Solders, Type
metals, Gun metals, Phosper, Bronzes,
Bell metal, Brass, Aluminium Alloys,
Lead Bronze, Manganese Bronze etc.

**BENGAL METAL WORKS
LTD., CALCUTTA.**

Metal Utensils.

**BOLINJKAR METAL WORKS
LTD., BOMBAY.**

Steel Belt Lacings.

**BUNGO STEEL FURNI-
TURE LTD, CALCUTTA.**

Steel Furniture of all types including Hospital
beds and security equipment.

**JAY ENGINEERING WORKS
LTD., 24 PARGANAS.**

Heating Stove.

BRANDS & TRADE MARKS	APPLICATIONS	FIRM OR COMPANY
	Sand Paper, Emery Paper & Emery Cloth, Glass Cloth, Tapes, Disc Combinations, Endless Bands, etc.	KRISHNALAL THIRANI & CO., LTD., CALCUTTA.
	Enamel Wares.	MADRAS ENAMEL WORKS LTD., MADRAS.
C.E.M.	Expanded Metal.	CALCUTTA EXPANDED METAL MFG., CO., LTD., CALCUTTA.
CHOWRINGHEE	Cooking Ranges.	JAY ENGINEERING WORKS LTD., 24 PARGANAS.

COOPER

Diesel Oil Engines and Machine Tools.

**COOPER ENGINEERING
LTD., SATARA ROAD.**

13



Aluminium ware, Brass and Copper Ware.

**JEEWANLAL (1929) Ltd.,
CALCUTTA.**



Drills, Reamers, Cutters.

INDIAN TOOL MANUFACTURERS LTD., BOMBAY.



Non-ferrous alloys and metals.

**INDIAN SMELTING AND
REFINING CO., LTD.,
BOMBAY.**

DOUBLE JACKAL

Cooking Ranges.

**JAY ENGINEERING WORKS
LTD., 24 PARGANAS.**



Gun metal, Phosper Bronze, Brass Nickel,
Silver, Aluminium & other non-ferrous
ingots.

**INDIAN STANDARD METAL
CO., LTD., BOMBAY.**

•

**BRANDS & TRADE
MARKS**

APPLICATIONS

FIRM OR COMPANY

DUTT

Machine Tools.

P. N. DUTT & CO., LTD.,
CALCUTTA.



Electric Motors, Pumping Sets, Motor
Starters, Transformers, Switch Gear.

ELECTRIC CONSTRUCTION
AND EQUIPMENT CO.,
LTD., CALCUTTA.



C. I. Pans, G. I. Buckets, Castings of any
descriptions, Machinery Parts, Sanitary
fittings etc.

JOGENDRA NATH CHAT-
TERJEE & SONS,
HOWRAH.

Fan Regulators.

INDIA ELECTRIC WORKS
LTD., CALCUTTA.



Electric Fans.

ENGINEERING WORKS OF
INDIA LTD., CALCUTTA.



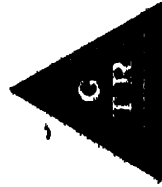
**FIRESTONE TYRE &
RUBBER CO. OF INDIA
LTD., BOMBAY.**

**Tyres, Tubes, Repair materials & Hard Rubber
Battery Boxes.**



**F. N. GOOPTU & CO.,
CALCUTTA.**

Fountain pens, Nibs, Pen holders, Pencils etc.



**G. T. R. CO. LTD.,
CALCUTTA.**

**S. H. T. Valves, Parallel slide valves, Double
Seated Clip Gate Valves etc.**

GLOBE

**UNIVERSAL SCREW FAC-
TORY, CHHEHARATA
(E. P. R.).**

Wood Screws.

Godrej

**GODREJ & BOYCE MFG.
CO. LTD., BOMBAY.**

**Automatic Filing Cabinets, Card Index Cabi-
nets, steel office household and Hospital
Furniture, Safes, Shelving Racks, Security
Equipment, Locks.**

BRANDS & TRADE
MARKS



APPLICATIONS

FIRM OR COMPANY

Locks.

GODREJ & BOYCE MFG.
CO. LTD., BOMBAY.

Cycles.

HINDUSTHAN BICYCLE
MFG. & INDUSTRIAL
CORPN. LTD.,
CALCUTTA.

Antifriction Bearing Metals (White Metal).

INDIAN STANDARD METAL
CO. LTD., BOMBAY.

HANUMAN

Lathes, Planing Machine, Boaring Machine,
Printing Machine, Sugar Cane Crushing
Machine, Hacksaw Machine, Sovel, Grin-
der, Oil Ghanny and Chaff cutters.

HANUMAN ENGINEERING
WORKS LTD.,
CALCUTTA.

HANUMAN

Galvanised Strapping Wire, Galvanised Stran-
ded Wire, Electrode wire, Pin Wire and
various types of Spring Steel Wires.

INDIAN STEEL & WIRE
PRODUCTS LTD.,
CALCUTTA.

HIMALAYA

Railway Carriage Fans and Regulators.

**INDIA ELECTRIC WORKS
LTD., CALCUTTA.**



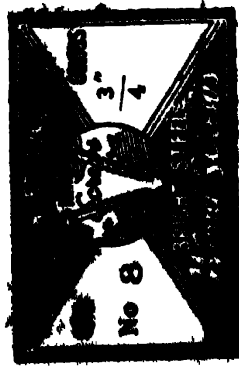
Cycles and Spare Parts.

**HIND CYCLES LTD.,
BOMBAY.**



Motor Cars, Trucks, Engines etc.

**HINDUSTAN MOTORS LTD.,
CALCUTTA.**



Wood Screws.

**HIND SCREWS & METAL
WORKS, DELHI.**

HINDUSTAN

Motor Cars.

**HINDUSTAN MOTORS LTD.,
CALCUTTA.**

BRANDS & TRADE MARKS	APPLICATIONS	FIRM OR COMPANY
<i>Humeogenous</i>	Concrete Pipes.	INDIAN HUME PIPE CO. LTD., BOMBAY.
<i>Humepipe</i>	Concrete Pipes.	INDIAN HUME PIPE CO. LTD., BOMBAY.
<i>Humesteel</i>	Concrete Pipes.	INDIAN HUME PIPE CO. LTD., BOMBAY.
	Fans, Electric Bakelite Fittings, Domestic appliances, Instruments.	INDIA ELECTRIC WORKS LTD., CALCUTTA.
INDIA CYCLE	Cycles.	INDIA CYCLE MFG. CO., LTD., CALCUTTA.

INDIA



Electric Lamps.

**BENGAL ELECTRIC LAMP
WORKS, LTD.,
CALCUTTA.**

Electric Fans.

**INDIA ELECTRIC WORKS
LTD., CALCUTTA.**

INDIA

Cycle Bells, Lamps, Carriers and other Com-
ponents.

**INDIA CYCLE MFG., CO.,
LTD., CALCUTTA.**

221 INDIA

Electro Technical Goods, viz:—Switches,
Ceiling Roses, Fuse Cut-outs, joint cut-
outs, Junction boxes, Lamp Holders etc.

**SWADESHI INDUSTRIES
LTD., CALCUTTA.**

I.M.C.

Malleable Iron Castings of all types.

**INDIAN MALLEABLE
CASTINGS LTD.,
CALCUTTA.**

INVESTA

Lathes, Shearing & Punching M/C Drilling
M/C. 24" Core Making M/C Mandrill
Press Polishing M/C.
P-1 & P-2.
Brick Making M/C.

**INVESTA MACHINE TOOLS
AND ENGINEERING CO.,
LTD., BOMBAY.**

ISM

Tin, Solder, Type-Metal, Acid & Alkali
resisting alloys.

**INDIAN STANDARD METAL
CO., LTD., BOMBAY.**

BRANDS & TRADE MARKS	APPLICATIONS	FIRM OR COMPANY
JAY	Railway Safety Appliances, Water Meters, Cooking Ranges and Electric Fans.	JAY ENGINEERING WORKS LTD., 24 PARAGANAS.
JAYANT	Brass, Copper & Bronze Metal building fixtures.	JAYANT METAL MFG. CO., BOMBAY.
J.M.I.	Gun-metal, Phospor Brnoze and other ingots.	JAIPUR METAL INDUSTRIES LTD., JAIPUR (RAJPU- TANA).
J. K. HAND & HAMMER BRAND	Ingots, Sheets, Circles and utensils.	ALUMINIUM CORPORATION OF INDIA LTD., CALCUTTA.
JYOTI	Hurricane Lanterns.	JAY ENGINEERING WORKS LTD., CALCUTTA.
JYOTI	Pumps, Paper cutting & Welding machinery, Presses, Steel Vessels & Industrial Plants.	JYOTI LTD., BARODA.



Hammers, Augers, Vices, Hand Band, Circular Saws, Axes, Beaters, Shovels, Powraths and agricultural implements of every kind.

KAMANI ENGINEERING
CORPN., LTD., BOMBAY.

K1, K2, K3 AND K4

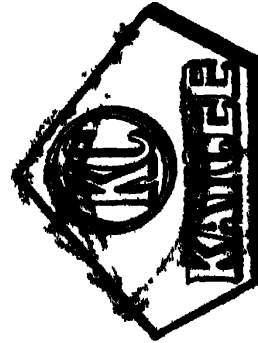
White metal.

JAIPUR METAL INDUSTRIES
LTD., JAIPUR (RAJPU-
TANA).



A. C. Capacitor Ceiling Fans, All types of
A. C. & D. C. Fans.

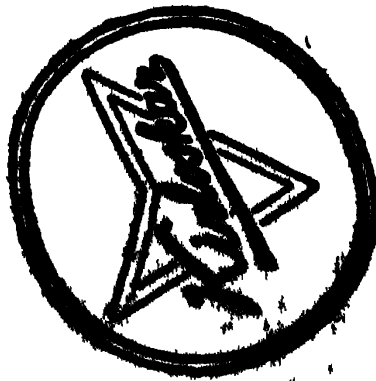
MATCHWEL ELECTRICALS
(INDIA) LTD., DELHI.



Electric fans including ceiling, table, cabinet and exhaust fans, Lamps, motors, Sirens, Generators, transformers, flash testers, laboratory apparatus, expanded metal, electrical measuring instruments Glass Tumblers, Table hollow wares, dry cells.

KAYCEE INDUSTRIES LTD.,
BOMBAY.

**BRANDS & TRADE
MARKS**



FIRM OR COMPANY	APPLICATIONS	
KIRLOSKAR BROS. LTD., KIRLOSKARVADI, SATARA.	Electric Motors, Agricultural Implements, Pumps.	
AMIN CHAND PAYARE LAL, JULLUNDUR CITY.	Buckets, Tubs, heaters etc.	
LEIPZIG CHEMICAL AND ENGINEERING WORKS, CALCUTTA.	Self-contained plants for Rice, Dal, Barley, Oats and allied accessories, Steel and Brass Hinges, Buckets, (G. I.) Lubricators (Grease Cups) Malleable Pipe fittings.	

LESLIE

NATIONAL'S



LION BRAND

LUCKY

Cooking Ranges.

Glass-Paper.

A. C. Non Capacitor Fans.

Antifriction Bearing Metals.

Meehanite Metal.

Fountain Pens.

**JAY ENGINEERING WORKS
LTD., 24 PARGANAS.**

**NATIONAL SAND PAPER
MILLS (INDIA) LTD.,
GHAZIABAD, U. P.**

**MATCHWEL ELECTRICALS
(INDIA) LTD., DELHI.**

**INDIAN STANDARD METAL
CO., LTD., BOMBAY.**

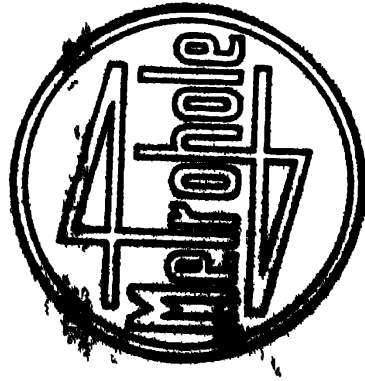
**COOPER ENGINEERING
LTD., SATRA ROAD.**

**DHIRAJ PEN MFG. CO.,
LTD., BOMBAY.**

MECHANITE METAL

METRO PEN

**BRANDS & TRADE
MARKS**



Electric Motors, Fans.

**METROPOLE WORKS,
VERKA, AMRITSAR.**

MUKAND

Rolled Bars, Angles, Hoops, Steel & Iron.

**MUKAND IRON & STEEL
WORKS LTD., BOMBAY.**

MSR

Spraying Pistol.

**METAL SPRAYING PRODUCTS
CALCUTTA.**



Cables & Wires for all electrical purposes.

**NATIONAL INSULATED
CABLE CO., OF INDIA
LTD., CALCUTTA.**

N. I.

For all products.

**NATIONAL METAL INDUS-
TRIES LTD., CALCUTTA.**

NEPPER

Cooking Stoves.

**JAY ENGINEERING WORKS
LTD., 24 PARGANAS.**

OLYMPIC

Fountain Pens.

**DHIRAJ PEN MFG. CO.,
LTD., BOMBAY.**

ORIENT

Ceiling & Table fans and other all kinds of
electrical & plastic goods products.

**CALCUTTA ELECTRICAL
MFG. CO., LTD.,
CALCUTTA.**

PARIS

Fountain Pens.

**DHIRAJ PEN MFG. CO.,
LTD., BOMBAY.**



Lathes & Lathe Chucks.

**PAUL'S ENGINEERING CO.,
HOWRAH.**

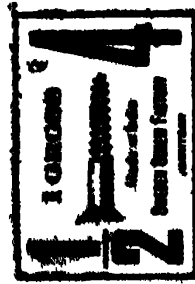


Valves, Cocks, Screws, Cutting Tools etc.

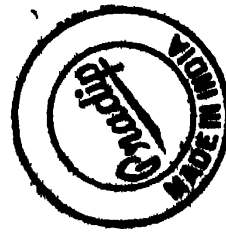
**PEEPUL IRON & STEEL
INDUSTRIES LTD.,
CAWNPORE.**

**BRANDS & TRADE
MARKS**

PHOENIX



PINION & I. E. C.



APPLICATIONS

Electric Fans.

Wood and machine screws, Panel Pins, Nails,
Rivets etc.

Machine Tools e.g., Nail Making, Rivets
Making machine, wood screw making
plants.

Incandescent Electric Lamps.

FIRM OR COMPANY

ENGINEERING WORKS OF
INDIA LTD., CALCUTTA.

SWEDEN SCREW FACTORY,
C/O. INDIAN ENGI-
NEERS' CORPN. LTD.,
AMRITSAR.

INDIAN ENGINEERS'
CORPN. LTD.,
AMRITSAR.

PRADIP LAMP WORKS,
PATNA CITY.

PRAKASH

Hurricane Lanterns No. 252.

**RAGHU ENGINEERING
WORKS LTD., DELHI.**

PRATAP

Metal Wares.

**PRATAP ALUMINIUM
WORKS, CALCUTTA.
C/O. JAMNADAS BROS.,
CALCUTTA.**

QUEEN OF SCOTS

Cooking Stoves.

**JAY ENGINEERING WORKS
LTD., 24 PARGANAS.**

RADIO

Electric Lamps.

**RADIO LAMP WORKS LTD.,
BOMBAY.**

RAGHU

Electric Fans.

**RAGHU ENGINEERING
WORKS LTD., DELHI.**



Bolts, Nuts, Rivets, sheet metal goods, Hollow
wares, utensils etc., etc.

**KHEM CHAND RAJKUMAR,
JULLUNDUR CITY.**

Ranjit

RANJIT

Electric ceiling and table fans, Fractional
Motors, I. C. Switches and Brass Holders.

**G. T. R. CO., LTD.,
CALCUTTA.**

A. C. Ceiling Fans.

**INDIA ELECTRIC WORKS
LTD., CALCUTTA.**

**BRANDS & TRADE
MARKS**

Regal

RENO

ROHMANN



SHARP



SIMPSON

STANDARD

APPLICATIONS

Safes, Almira, Filing Cabinet, etc.

Chaff Cutting Blades.

D. C. Ceiling Fans.

All sorts of Non-ferrous alloys viz., antifriction, White Bearing Metals, Tin Solders, Brazing solders, silver solders, Gun Metals, Brass, Bronze etc. to B.S.S. & I.R.S.S., I.S.D., & any other specification.

Ingots of any specification.

Wood Screws, Machine Screws, Rivets and Tacks.

Gas Plants.

Machines, Pumps, Presses, Grease cups, circular saws, Lubricators, Railway signalling and interlocking apparatus etc.

FIRM OR COMPANY

EAST INDIA STEEL WORKS
LTD., CALCUTTA.

AMIN CHAND BHOLANATH,
JULLUNDUR CITY.

INDIA ELECTRIC WORKS
LTD., CALCUTTA.

SARU SMELTING & RE-
FINING CORPN. LTD.,
MEERUT.

BINANI METAL WORKS
LTD., CALCUTTA.

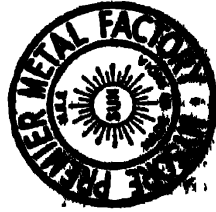
JAGATJIT ENGINEERING
WORKS, KAPURTHALA.

MAPARA PAREKH & CO.,
BOMBAY.

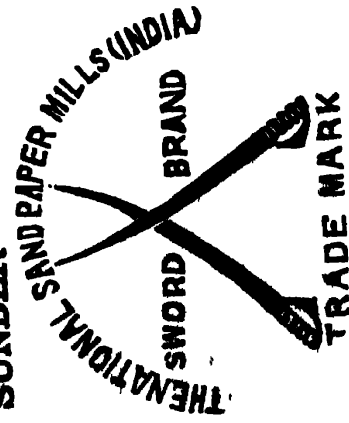
NEW STANDARD ENGI-
NEERING CO., LTD.,
BOMBAY.



STORWEL



SUNDER



Platform weighing Machines, Weigh Bridges,
different types of Precision Machines.

STAR IRON WORKS,
LILLOOAH.

Antimony.

STAR METAL REFINERY,
BOMBAY.

Steel Almirahs.

GODREJ & BOYCE MFG.
CO., LTD., BOMBAY.

Stainless steel, Brass copper, Aluminium and
other metal wares.

MYSORE PREMIER METAL
FACTORY, MADRAS.

Gramophone needle, Paper clips, paper pins.

INDIAN CLOCK MFG. CO.,
LTD., JAMSHEDPUR.

Glass Paper, Glass Cloth, Emery Paper,
Emery cloth, emery powder.

NATIONAL SAND PAPER
MILLS (INDIA) LTD.,
GHAZIABAD.

BRANDS & TRADE MARKS

APPLICATIONS

FIRM OR COMPANY

TARA

Fans.

INDIA ELECTRIC WORKS
LTD., CALCUTTA.

TEJ

Strainers, Centrifugal Pumps.

RELIABLE WATER SUPPLY
SERVICE OF INDIA LTD.,
LUCKNOW.

TAMMADO

Textile Machinery such as Ring frames,
Rings, Spindles, Conversion material and
spare parts.

TEXTILE MACHINERY COR-
PORATION LTD.,
CALCUTTA.

TIGER BRAND

Agricultural instruments, milk cans, drums,
containers and other dairy requisites,
Buckets, Tubs, Salamanders, Bus Horns,
Iron Pressings, Iron Dhobi, G. M. and
Brass, sanitary fittings.

AMIN CHAND BHOLA
NATH, JULLUNDER
CITY.

TISCROM

Special Steels.

TATA IRON & STEEL CO.,
LTD., CALCUTTA.

U. S. F.

Wood Screws, Machine Screws, Rivets and
tacks.

UNIVERSAL SCREW FAC-
TORY, CHHEHARATA
(E. P. R.).

USHA

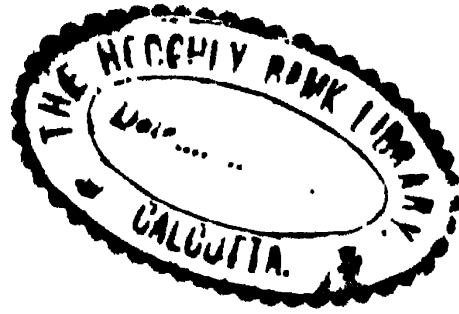
Sewing Machines, Electric Fans, Paints.

JAY ENGINEERING WORKS
LTD., CALCUTTA.

Wood Screws, Machine Screws, Rivets and
Panel Pins etc. VICTOR INDUSTRIES,
AMRITSAR.

GODREJ & BOYCE MFG. CO.,
LTD., BOMBAY.

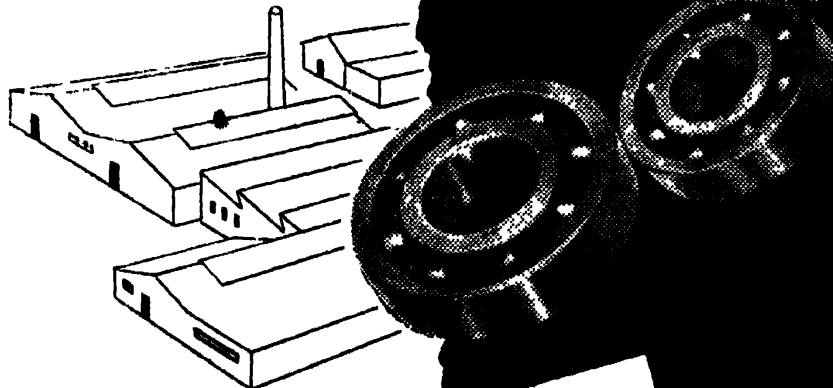
Visible Filing System.



50
YEARS IN THE INDUSTRY

WHATEVER THE JOB

.... FIT A HOFFMANN BEARING



For half a century **HOFFMANN**
bearings have earned a reputation for
quality, precision and service.

For your requirements enquire from

NATIONAL BEARING CO., LIMITED

*Jalpur, Rajputana.
Sole Distributors & Manufacturers Under license of Hoffmann Bearings
Calcutta Office, 1-A, Vansittart Row, Dalhousie Square.*

**BRANDS & TRADE
MARKS**

TARA

TES

TAMMOL

TIGER BRAND

TISCROM

U. S. F.

USHA

Galvanised Stranded Wire

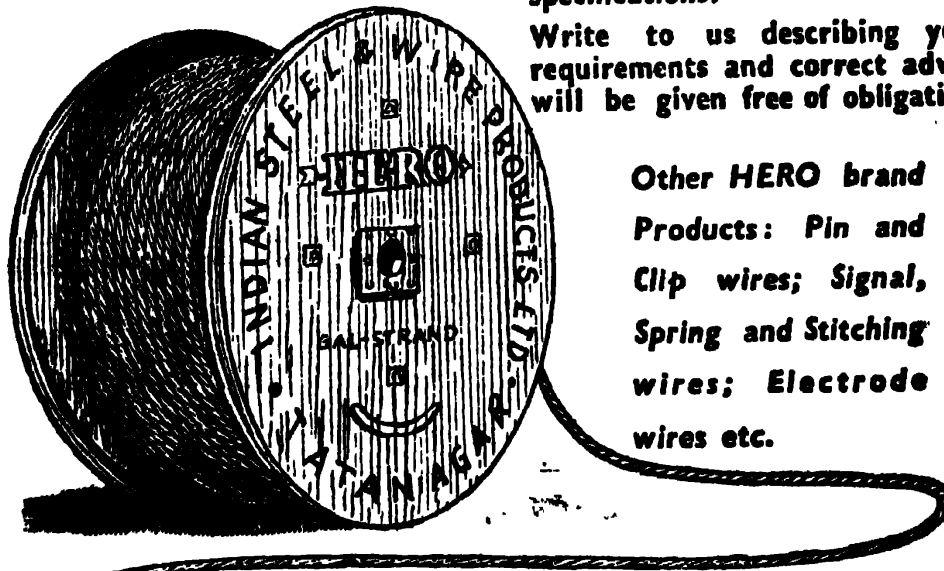
IS NOW MADE IN INDIA



At our works in Tatanagar, HERO brand galvanized stranded wires are manufactured in sizes ranging in diameter from 3/8" to 3/16", 7 ply and supplied in battened wooden spools of 10 cwts. each, 4000 to 15000 ft., in continuous lengths according to size.

Supplies can also be made to tensile strengths of 40 to 90 tons per square inch and to different specifications.

Write to us describing your requirements and correct advice will be given free of obligation.



Other HERO brand Products: Pin and Clip wires; Signal, Spring and Stitching wires; Electrode wires etc.

THE
INDIAN STEEL & WIRE PRODUCTS LTD
TATANAGAR

Telegram—"TRIAL" 34 & 36, Jatindra Mohan Avenue,

Phone: { B. B. 1364
B. B. 2459

CALCUTTA 6.

We are Pioneer manufacturers of the following products:-

- I. Lathe, 6', 8', 10', 12', 18'
- II. Planer 9'-6" & 4'-6"
- III. Horizontal Boring machine
- IV. Hacksaw machine
- V. Chaff-cutter
- VI. Oil Ghunny (Kolhu)
- VII. Double-headed Grinder
- VIII. Printing Press
- IX. Pan
- X. Sugar cane-crusher of different sizes
- XI. Shovel
- XII. Jute and Cotton Mill Machineries.

We undertake all kinds of casting and fabricating jobs.

Please call for quotations and Price Lists.

We are the only producers of Antimony "Star Metal", and Antimony Sulphide in India. Quality equal to World's best. Conforms to I. S. D. and B. S. S. specifications. Please enquire :

**THE STAR METAL REFINERY,
361, Hornby Road, 4th Floor, Fort, BOMBAY.**

Engineering Association of India

BUYER'S GUIDE

**Complete Addresses of Manufacturers
and Producers will be found on
pages 11 to 32**

A

Abrasives

Ajax Products Ltd.	... Madras.
Krishnalal Thirani & Co., Ltd.	... Calcutta.
National Sandpaper Mills (India) Ltd.	... Ghaziabad.
Hindustan Abrasives	... Bihta (Bihar).

Adjustable Spanners

Peepul Iron & Steel Industries Ltd.	... Kanpur.
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Agricultural Implements & Machinery

Bindeswari Iron & Steel Corporation	... Calcutta.
Kamani Engineering Corporation Ltd.	... Bombay.
Cooper Engineering Ltd.	... Satara.
Kirloskar Brothers Ltd.	... Satara.
Sree Gopal Iron Works	... Calcutta.
Singh Engineering Works Ltd.	... Kanpur.
Tata Iron & Steel Co., Ltd.	... Calcutta.
Aminchand Payarelal	... Jullunder City.
Aminchand Bholanath	... Jullunder City.
D. K. Das & Co., Ltd.	... Howrah.
Jyoti Ltd.	... Baroda.
Khem Chand Raj Kumar	... Jullunder City.
Hind Machines Ltd.	... Howrah.
Ludhiana Steel Rolling Mills	... Ludhiana.
Peepul Iron & Steel Industries Ltd.	... Kanpur.
Hind Tank Manufacturing Co.	... Bombay.

A—Contd.

Agricultural Implements & Machinery—(Contd.)

Steel Equipment & Construction Ltd.	...	Lilluah.
Agricultural Industries	...	Batala (PB).
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Jay Engineering Works Ltd.	...	Calcutta.
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
A. R. Shining Foundry, & Engineering Works	...	Batala (Ph.).
Agarwal Iron Works	...	Agra.

Air Compressors (Single Stage)

New Standard Engineering Co., Ltd.	...	Bombay.
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Air Conditioning Equipment

Cooper Engineering Ltd.	...	Satara.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.

Almirahs (Steel)

Ajax Products Ltd.	...	Madras.
Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Steel Equipment & Construction Ltd.	...	Lilloah.
Bungo Steel Furniture Ltd.	...	Calcutta.
Harbanslal Malhotra & Sons Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.
Amin Chand Payarelal	...	Jullunder City.
Jas. Alexander & Co., Ltd.	...	Calcutta.
East India Steel Works Ltd.	...	Calcutta.

Aluminium Alloys & Castings

(See non-ferrous metals & alloys)

Aluminous Chemicals

(See non-ferrous metals & alloys)

A—Contd.**Aluminium Sheets**

(See non-ferrous metals & alloys) ...

Aluminium Wares

Jecwanlal (1929) Ltd.	...	Calcutta.
Kamani Engineering Corporation Ltd.	...	Bombay.
Mysore Premier Metal Factory	...	Madras.
Hindustan Metal Refinery & Rolling Mills	...	Madras.
Jamnadas Brothers	...	Calcutta.

Angithies

Ram Saran Das Aggarwal & Sons	...	Jullunder City.
Aminchand Payarelal	...	Jullunder City.

Anvils (Steel)

Mukand Iron & Steel Works Ltd.	...	Bombay.
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Antimony

(See non-ferrous metals & alloys)

Anti Corrosive Cast Iron

Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
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Autoclaves

Liluah Iron Works	...	Howrah.
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Automobiles

Hindustan Motors Ltd.	...	Calcutta.
Premier Automobiles Ltd.	...	Bombay.

Axle

Precious Die Works	...	Bombay.
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Baby Cars

Mapara Parekh & Co. ... Bombay.

Baling Hoops (Cotton & Jute)

J. K. Iron & Steel Co., Ltd. ... Kanpur.

Ball & Roller Bearings

National Bearing Co., Ltd. ... Calcutta.

Band Saws

Hind Machines Ltd. ... Howrah.
Machine Mfg. Co., Ltd. ... Howrah.

Bars (Iron & Steel)

(See Mild Steel Sections)

Batteries

Kaycee Industries Ltd. ... Bombay.

Battery Boxes (Hard Rubber)

Firestone Tyre & Rubber Co. of India Ltd. ... Bombay.

Belt-Lacings (Steel)

Bolinjkar Metal Works Ltd. ... Bombay.
Hind Tank Manufacturing Co. ... Bombay.

Beltings

Bengal Belting Works Ltd. ... Calcutta.

Bench Drilling Machines

Peepul Iron & Steel Industries Ltd. ... Kanpur.
Cooper Engineering Ltd. ... Bombay.
Hind Machines Ltd. ... Howrah.
New Standard Engineering Co., Ltd. ... Bombay.
Jas. Alexander & Co., Ltd. ... Calcutta.

Bench Vices

Peepul Iron & Steel Industries Ltd. ... Kanpur.

~~B—Contd.~~**Billets**

Tata Iron & Steel Co., Ltd.	...	Calcutta.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Indian Hume Pipe Co., Ltd.	...	Bombay.

Blades (Chaff Cutter)

Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Payarelal	...	Jullunder City.
Radha Govind Industries Ltd.	...	Mathura.

**Blades & Other Parts (Aluminium:
Fan for)**

Jeewanlal (1929) Ltd.	...	Calcutta.
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Bleaching Machinery

Vasant Industrial & Engineering Works		Bombay.
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Blowers & Burners

Jyoti Ltd.	...	Baroda.
New Standard Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Boats (Steel)

Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Howrah Trading Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.

Bobbin & Cycle Stoving Enamels

Jay Engineering Works Ltd.	...	Calcutta.
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Bolts & Nuts

Goodman & Co.	...	Calcutta.
Jayant Metal Manufacturing Co.	...	Bombay.
D. N. Singha & Co., Ltd.	...	Howrah.
Indian Steel & Wire Products Ltd.	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.
Khemchand Rajkumar	...	Jullunder City.
D. K. Dass & Co., Ltd.	...	Howrah.

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- Castings
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- Powder (For Fire Works)
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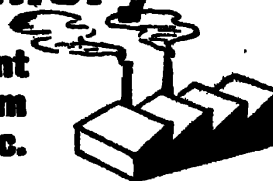
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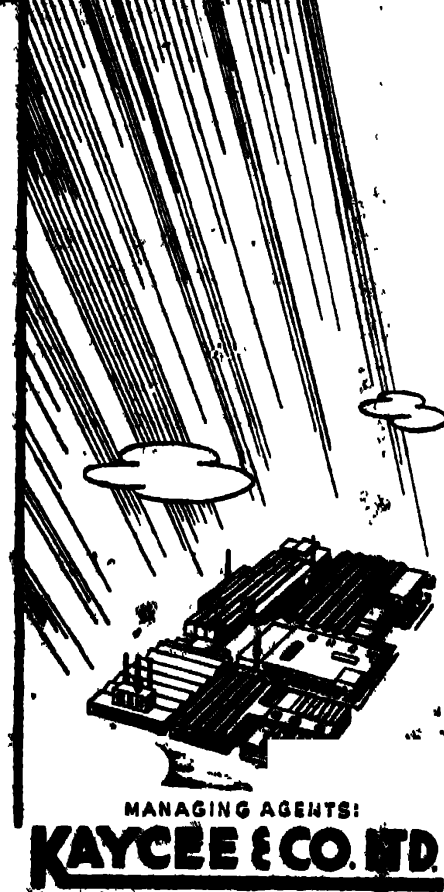
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Calcutta, Madras, New Delhi, Poona,
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~~B~~—Contd.

Bolts & Nuts—Contd.

Ludhiana Steel Rolling Mills	...	Ludhiana.
Hind Tank Manufacturing Co.	...	Bombay.
Metropole Works	...	Amritsar.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Usha Bolt & Nut Co.	...	Calcutta.
Aminchand Bholanath	...	Jullunder City.
Agarwal Iron Works	...	Agra.
Shree Krishna Ltd.	...	Calcutta.
Associated Contractors Ltd.	...	24 Parganas.
National Iron & Steel Co., Ltd.	...	Calcutta.

Boring Machine (Horizontal)

Hanuman Engineering Works Ltd.	...	Calcutta.
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Boilers (Locomotive)

Tata Locomotive & Engineering Co., Ltd.	...	Tatanagar.
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**Bottles (Aluminium Sandalwood,
Oil Industry for)**

Jeewanlal (1929) Ltd.	Calcutta.
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Bowls (Tea Rung)

Jeewanlal (1929) Ltd.	Calcutta.
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Brass & G M Water Fittings

Ram Saran Dass Aggarwal & Sons	Jullunder City.
Aminchand Payarelal	Jullunder City.

Brass Sheets

(See non-ferrous metals & alloys)

Brass-Wares

Jeewanlal (1929) Ltd.	Calcutta.
Mysore Premier Metal Factory	Madras.
Jamnadas Bros.	Calcutta.
Tin Printing & Metal Works Ltd.	Delhi.

B—Contd.**Brick & Tile Making Machinery**

Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
Hind Tank Manufacturing Co.	...	Bombay.
Garlick & Co.	...	Bombay.

Buckets

Ramsaran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.
Bengal Metal Works Ltd.	...	Calcutta.
Howrah Trading Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Amin Chand Payarelal	...	Jullunder City.
Khem Chand Rajkumar	...	Jullunder City.
Leipzieg Chemical & Engineering Works	...	Calcutta.
Agarwal Iron Works	...	Agra.
Atta's Iron Foundry	...	Howrah.
Goodman & Co.	...	Calcutta.
Jogendra Nath Chatterjee & Sons	...	Calcutta.
Kapurthala Industries Ltd.	...	Kapurthala.
Sree Krishna Ltd.	...	Calcutta.
Shree Laxmi Iron & Steel Works Ltd.	...	Calcutta.

Building Equipment

Acme Manufacturing Co., Ltd.	...	Bombay.
Orient Industrial Engineering Co., Ltd.	...	Calcutta.
Jayant Metal Manufacturing Co.	...	Bombay.
Bolinjkar Metal Works Ltd.	...	Bombay.
Mysore Iron & Steel Works	...	Bhadravati (Mysore).
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Hind Tank Manufacturing Co.	...	Bombay.
Garlick & Co.	...	Bombay.
Aminchand Bholanath	...	Jullunder City.
Tin Printing & Metal Works Ltd.	...	Delhi.
New Standard Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Bus Horns

Aminchand Bholanath	...	Jullunder City.
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C**Cabinets**

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Bungo Steel Furniture Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.
Harbanslal Malhotra & Sons Ltd.	...	Calcutta.
Tin Printing & Metal Works Ltd.	...	Delhi.
Ajax Products Ltd.	...	Madras.
Anandram Mahadeolal	...	Calcutta.
East India Steel Works Ltd.	...	Calcutta.

Cabinets (Card Index)

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
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Cabinets (Index File)

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
East India Steel Works Ltd.	...	Calcutta.

Cabinets (Visible Card Index)

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
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Cables (Motor Car Ignition)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cables (Aerial)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cables (V. I. R. Insulated)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cables (V. I. R. Insulated Lead Alloy Sheathed)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cables (V. I. R. Insulated Tough Rubber Sheathed)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cane Crushers (Kolhoos)

Peepul Iron & Steel Industries Ltd.	Kanpur.
Renwick & Co., Ltd.	Calcutta.

C—Contd.**Cane Crushers (Kolhoos)**

Chuttan Lall Mattu Mal	...	Delhi.
Agarwal Iron Works	...	Agra.
Bindeswari Iron & Steel Corporation	...	Calcutta.
Hanuman Engineering Works Ltd.	...	Calcutta.
Agricultural Industries	...	Batala (Pb.).
Radha Govind Industries Ltd.	...	Mathura.
Mukand Iron & Steel Works Ltd.	...	Bombay.

Cans

Amin Chand Payarelal	...	Jullunder City.
Amin Chand Bholanath	...	Jullunder City.
Goodman & Co.	...	Calcutta.

Capstan Lathes

Cooper Engineering Ltd.	...	Satara Road (Bombay).
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Carts (Steel)

Howrah Trading Co., Ltd.	...	Calcutta.
Garlick & Co.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
New Standard Engineering Co., Ltd.	...	Bombay.
Thakurdas Sureka	...	Howrah.

Cash Boxes & Coffers

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Ajax Products Ltd.	...	Madras.
East India Steel Works Ltd.	...	Calcutta.

Castings (Ferrous)

New Standard Engineering Co., Ltd.	...	Bombay.
Chhuttan Lall Mattumal	...	Delhi.
J. K. Iron & Steel Co., Ltd.	...	Kanpur.
Bubna Engineering Co.	...	Calcutta.
Development of Metal Industries Ltd.	...	Calcutta.
Jogendra Nath Chatterjee & Sons	...	Calcutta.
Sree Gopal Iron Works	...	Calcutta.

Castings (Iron)

G. T. R. Co., Ltd.	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.
India Machinery Co., Ltd.	...	Calcutta.

C—Contd.**Castings (Iron)—Contd.**

Britannia Engineering Works & Foundry ...	Calcutta.
Castings Corporation of India Ltd. ...	Howrah.
Chhuttan Lall Mattu Mal , ...	Delhi.
D. K. Das & Co., Ltd. ...	Howrah.
Star Iron Works ...	Lilloah.
Mysore Iron & Steel Works ...	Bhadravati (Mysore).
Hind Tank Manufacturing Co. ...	Bombay.
Jas. Alexander & Co., Ltd. ...	Calcutta.
Hind Machines Ltd. ...	Howrah.
Jamshedpur Engineering & Machine Manu- facturing Co., Ltd. ...	Tatanagar.
Mukand Iron & Steel Works Ltd. ...	Bombay.
Cooper Engineering Ltd. ...	Satara Road (Bombay).
Metropole Works ...	Verka (Amritsar).
Indian Hume Pipe Co., Ltd. ...	Bombay.
Shaparia Dock & Steel Co., Ltd. ...	Bombay.
Howrah Trading Co., Ltd. ...	Calcutta.
Peepul Iron & Steel Industries Ltd. ...	Kanpur.
Agarwal Hardware Works Ltd. ...	Calcutta.
Burjorji Pestonji & Sons Ltd. ...	Bombay.
Atta's Iron Foundry ...	Howrah.
Bagri Iron & Steel Co. ...	Calcutta.
Malleable Iron & Steel Castings Co., Ltd. . .	Bombay.
R. Tarruck & Co. ...	Howrah.
National Iron & Steel Co., Ltd. ...	Calcutta.

Castings (Malleable Iron)

Indian Malleable Castings Ltd. ...	Calcutta.
Malleable Iron & Steel Castings Co., Ltd. ...	Bombay.

Castings (Steel)

Bhartia Electric Steel Co., Ltd. ...	Calcutta.
Mukand Iron & Steel Works Ltd. ...	Bombay.
Mysore Iron & Steel Works ...	Bhadravati (Mysore).
J. K. Iron & Steel Co., Ltd. ...	Kanpur.
National Iron & Steel Co., Ltd. ...	Calcutta.
Singh Engineering Works Ltd. ...	Kanpur.
Indian Hume Pipe Co., Ltd. ...	Bombay.
Indian Steel & Wire Products Ltd. ...	Calcutta.

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HAZARIBAGH—1, Lepo Road, Bihar
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C—Contd.

Castings (Non-ferrous)

(See non-ferrous metals & alloys)

Cement Machinery

(See Industrial Plant & Machinery)

Chaff-Cutters

A. R. Shining Foundry & Engineering Works.	Batala (Pb.).
Agarwal Iron Works	... Agra.
Amin Chand Payrelal	... Jullunder City.
Hanuman Engineering Works Ltd.	... Calcutta.
Agricultural Industries	... Batala (Pb.).
Radha Govind Industries Ltd.	... Mathura (U. P.).

Chains (M S)

Amin Chand Payarelal	...	Jullunder City.
Khem Chand Rajkumar	...	Jullunder City.
Garlick & Co.	...	Bombay.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.

Chilled Cast Iron

Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Chimneys

Hind Tank Manufacturing Co.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Jyoti Ltd.	...	Baroda.
Mysore Iron & Steel Works	...	Bhadravati (Mysore)
Garlick & Co.	...	Bombay.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
New Standard Engineering Co., Ltd.	...	Bombay.

Chimney Ware

Ogale Glass Works Ltd.	...	Satara.
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C—Contd.**Circles (Aluminium)**

(See non-ferrous metals & alloys)

Circular Saws

Hind Machines Ltd.	...	Howrah.
Bharat Tool Manufacturing Co., Ltd.	...	Bombay.
Kamani Engineering Corporation Ltd.	...	Bombay.
New Standard Engineering Co., Ltd.	...	Bombay.

Cisterns

United Iron & Steel Corporation Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Castings Corporation (India) Ltd.	...	Howrah.
Hind Machines Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Jay Engineering Works Ltd.	...	24-Parganas.
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Thakurdass Sureka	...	Howrah.

Clips (Paper)

Indian Clock Manufacturing Co., Ltd.	...	Jamshedpur.
Indian Engineers' Corporation Ltd.	...	Amritsar.

Clips (gem)

Indian Clock Manufacturing Co., Ltd.	...	Jamshedpur.
Shree Jam Wire Products Ltd.	...	Bombay.

Clocks

Indian Clock Manufacturing Co., Ltd.	...	Jamshedpur.
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Cocks & Valves & Hydrant

D. K. Das & Co., Ltd.	...	Howrah.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Aminchand Payarelal	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.
Kirloskar Brothers Ltd.	...	Satara.
Garlick & Co.	...	Bombay.
G. T. R. Co., Ltd.	...	Calcutta.
Khem Chand Raj Kumar	...	Jullunder City.

Coin Moulds

Shree Krishna Ltd.	Calcutta.
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C—Contd.**Concrete Block Making Machines**

New Standard Engineering Co., Ltd. ... Bombay.

Condensers

Saru Smelting & Refining Corporation Ltd. ... Meerut.
 Garlick & Co. ... Bombay.
 Hind Tank Manufacturing Co. ... Bombay.
 Jas. Alexander & Co., Ltd. ... Calcutta.
 Jyoti Ltd. ... Baroda.

Conductors (Aluminium : Steel reinforced)

National Insulated Cable Co. of India Ltd. ... Calcutta.

Conductors (Hard Drawn : Bare Copper : Solid & Stranded)

National Insulated Cable Co. of India Ltd. ... Calcutta.

Conveyors

Liluah Iron Works ... Howrah.

Colliery Stores

Howrah Trading Co., Ltd. ... Calcutta.
 Bhartia Electric Steel Co., Ltd. ... Calcutta.

Construction Machinery Parts

(See machine parts)

Containers (Aluminium Embrocation Pharmaceutical Industry for)

Jeewanlal (1929) Ltd. ... Calcutta.

Containers

Mapara Parekh & Co. ... Bombay.
 Tin Printing & Metal Works Ltd. ... Delhi.
 Aminchand Payarelal ... Jullunder City.
 Khem Chand Rajkumar ... Jullunder City.
 Hind Tank Manufacturing Co. ... Bombay.
 Aminchand Bholanath ... Jullunder City.
 Hind Machines Ltd. ... Howrah.

C—Contd.**Containers—Contd.**

Usha Bolt & Nut Co.	...	Calcutta.
Agarwal Iron Works	...	Agra.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Bubna Engineering Co.	...	Calcutta.
Dukhineswar Sarkar & Bros. Ltd.	...	Calcutta.

Cooking Ranges

Jay Engineering Works Ltd.	...	Calcutta.
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Coolers

Khemchand Raj Kumar	...	Jullunder City.
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Copper Sheets

(See non-ferrous metals & alloys)

Copper Ware

Jecwanlal (1929) Ltd.	...	Calcutta.
Mysore Premier Metal Factory	...	Madras.
Jamnadas Bros.	...	Calcutta.

Copper Wires (Enamelled)

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Cords (V. I. R. Insulated Flexible)

National Insulated Cable Co. of India Ltd.	..	Calcutta.
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Cranes

Liluah Iron Works	...	Howrah.
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Cupolas with air Blowing Equipment

New Standard Engineering Co., Ltd.	...	Bombay.
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Cushion Buttons

Precious Die Works	...	Bombay.
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Couplings

Liluah Iron Works	...	Howrah.
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Cutlery

Steel Equipment & Construction Ltd.	...	Calcutta.
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Cut-Tacks

Jagatjit Engineering Works	...	Kapurthala.
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C—Contd.**Cycle**

Hindustan Bicycle Manufacturing & Industrial Corporation Ltd.	.	Calcutta.
Hind Cycles Ltd.	...	Bombay.

Cycle Bells

India Cycle Manufacturing Co., Ltd.		Calcutta.
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Cycle Carriers

India Cycle Manufacturing Co., Ltd.		Calcutta.
Ludhiana Steel Rolling Mills	.	Ludhiana.

Cycle Lamps

India Cycle Manufacturing Co., Ltd.	..	Calcutta.
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Cycle Parts

Hindustan Bicycle Manufacturing & Industrial Corporation Ltd.	...	Calcutta.
Hind Cycles Ltd.	...	Bombay.
India Cycle Manufacturing Co., Ltd.	...	Calcutta.
Ludhiana Steel Rolling Mills	..	Ludhiana.
Bolinjkar Metal Works Ltd.	...	Bombay.
Hind Tank Manufacturing Co.	...	Bombay.
Aminchand Bholanath	..	Jullunder City.

Cycle Pumps

India Cycle Manufacturing Co., Ltd.	..	Calcutta.
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Cylinders

United Iron & Steel Corporation Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	..	Calcutta.
Hind Machines Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	..	Bombay.

D**Dies & Taps**

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Diesel Oil Engine

Cooper Engineering Ltd.	...	Satara Road
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- PLYMOUTH CARS
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consumption

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D—Contd.**Diesel Engine Parts**

Kapurthala Industries Ltd.	...	Kapurthala.
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Doors (Sliding)

Howrah Trading Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Doors (Fire Proof)

Burjorji Pestonji & Sons Ltd.		Bombay.
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Door Bolts & Hasps & Staple etc.

Sree Gopal Iron Works		Calcutta.
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Drain Cocks

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Drilling Machines

Cooper Engineering Ltd.	...	Satara Road.
Metropole Works	...	Amritsar.
India Machinery Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
New Standard Engineering Co., Ltd.	...	Bombay.
Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.

Drums

United Iron & Steel Corporation Ltd.	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.
Khem Chand Rajkumar	...	Jullunder City.
Hind Machines Ltd.	...	Howrah.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.
Hind Tank Manufacturing Co.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Bubna Engineering Co.	...	Calcutta.
Dukhinaswar Sarkar & Bros. Ltd.	...	Calcutta.
Goodman & Co.	...	Calcutta.
Ganpatray Ramnarain & Co.	...	Calcutta.

D—Contd.**Dry Cells**

Kaycee Industries Ltd.	...	Bombay.
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Dyeing Machinery

Vasant Industrial & Engineering Works	...	Bombay.
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Dye Vats

Burjorji Pestonji & Sons Ltd.	...	Bombay.
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E**Edge Runner Mills**

Machine Manufacturing Co., Ltd.	...	Howrah.
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Electrical Accessories

India Electric Works Ltd.	...	Calcutta.
D. N. Singha & Co., Ltd.	...	Howrah.
Calcutta Electrical Manufacturing Co., Ltd.	...	Calcutta.
Engineering Works of India Ltd.	...	Calcutta.
Kaycee Industries Ltd.	...	Bombay.
Raghu Engineering Works Ltd.	...	Delhi.
Metropole Works	...	Amritsar.
G. T. R. Co., Ltd.	...	Calcutta.
Castings Corporation (India) Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.
B. M. Singh & Son	...	Calcutta.
Matchwel Electricals (India) Ltd.	...	Delhi.
Electric Construction & Equipment Co., Ltd.	...	Calcutta.
Swadeshi Industries Ltd.	...	Calcutta.

Electrical Appliances (Household)

Jay Engineering Works Ltd.	...	24 Parganas.
India Electric Works Ltd.	...	Calcutta.
Metropole Works	...	Amritsar.
B. M. Singh & Son	...	Calcutta.
Matchwel Electricals (India) Ltd.	...	Delhi.

E—Contd.**Electric Fans & Regulators**

Calcutta Electrical Manufacturing Co., Ltd.	...	Calcutta.
Engineering Works of India Ltd.	...	Calcutta.
India Electric Works Ltd.	...	Calcutta.
Kaycee Industries Ltd.	...	Bombay.
Raghu Engineering Works Ltd.	...	Delhi.
Metropole Works	...	Amritsar.
G. T. R. Co., Ltd.	...	Calcutta.
B. M. Singh & Son	...	Calcutta.
Jay Engineering Works Ltd.	...	24-Parganas.
Matchwel Electricals (India) Ltd.	...	Delhi.

Electric Lamps

Bengal Electric Lamp Works Ltd.	...	Calcutta.
Kaycee Industries Ltd.	...	Bombay.
Pradip Lamp Works	...	Patna City.
Radio Lamp Works Ltd.	...	Bombay.

Electric Measuring Instruments

Kaycee Industries Ltd.	...	Bombay.
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Electric Motors

Kaycee Industries Ltd.	...	Bombay.
Kirloskar Brothers Ltd.	...	Satara.
Metropole Works	...	Verka (Amritsar).
India Electric Works Ltd.	...	Calcutta.
Jyoti Ltd.	...	Baroda.
Electric Construction & Equipment Co., Ltd.	...	Calcutta.
G. T. R. Co., Ltd.	...	Calcutta.

Electric Pole Fittings

Ludhiana Steel Rolling Mills	...	Ludhiana.
National Metal Industries Ltd.	...	Calcutta.
India Electric Works Ltd.	...	Calcutta.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Hind Tank Manufacturing Co.	...	Bombay.
Metropole Works	...	Amritsar.
B. M. Singh & Son	...	Calcutta.
Hind Machines Ltd.	...	Howrah.

Electric Transformers

Kaycee Industries Ltd	...	Bombay.
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E—Contd.

Electric Wires & Cables

National Insulated Cable Co. of India Ltd. ... Calcutta.

Electro Chemical Plants (Caustic Soda & Chlorine)

Vasant Industrial & Engineering Works ... Bombay.

Elevators

Liluah Iron Works ... Howrah.

Enamelled Wares & Enamelling

Madras Enamel Works Ltd. ... Madras.
Indian Enamel Works Ltd. ... Bombay.
India Electric Works Ltd. ... Calcutta.
Ogale Glass Works Ltd. ... Satara.
Kamani Engineering Corporation Ltd. ... Bombay.

Engine Chases Etc.

Hindustan Motors Ltd. ... Calcutta.

Exhaust Fans and Sirens

Kaycee Industries Ltd. ... Bombay.
Jas. Alexander & Co., Ltd. ... Calcutta.
Metropole Works ... Amritsar.
Liluah Iron Works ... Howrah.

Expanded Metal

Calcutta Expanded Metal Manufacturing Co., Ltd. ... Calcutta.
Indian Expanded Metals Ltd. ... Bombay.
Kaycee Industries Ltd. ... Bombay.
Hindusthan Wire & Metal Products Ltd. ... Calcutta.
Liluah Iron Works ... Howrah.

F

Ferro-Silicon

Mysore Iron & Steel Works ... Bhadravati
(South India).

Files

Mukand Iron & Steel Works Ltd. ... Bombay.
Khemchand Rajkumar ... Jullunder City.
Aminchand Bholanath ... Jullunder City.

F—Contd.

Filters

Aminchand Payarelal	..	Jullunder City.
Bharat Iron & Steel Corporation	...	Howrah.

Filter Presses

Jyoti Ltd.	...	Baroda.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Liluah Iron Works	...	Howrah.
Radha Govind Industries Ltd.	...	Mathura.

Fish-net Weights

Star Iron Works	...	Lillooah.
India Machinery Co., Ltd.	...	Calcutta.

Fountain Pens

Dhiraj Pen Mfg. Co.	...	Bombay.
F. N. Gooptu & Co.	...	Calcutta.

**Furnaces for Engineering Work
(Oil fired)**

New Standard Engineering Co., Ltd.	...	Bombay.
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Furnaces (Metallurgical)

Liluah Iron Works	...	Howrah.
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Furniture (Steel)

(See "Steel Security Equipment")

G

Gas Plant

Mapara Parekh & Co.	Bombay.
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Glass Globes (for Hurricane Lantern)

Ogale Glass Works Ltd.	... Satara.
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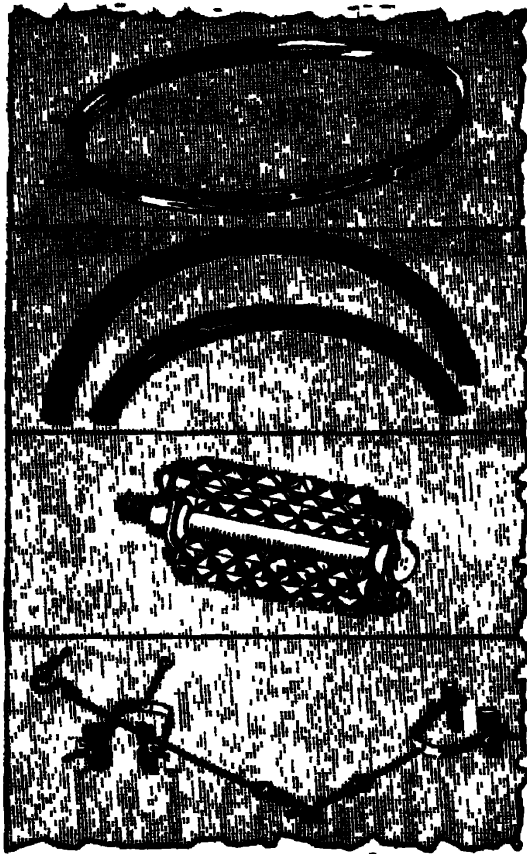
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. . DELHI . .

G—Contd.**Glass Shells**

Radio Lamp Works Ltd.	...	Shikohabad.
Bengal Electric Lamp Works, Ltd.	...	Calcutta.

Glass Tumblers

Radio Lamp Works Ltd.	...	Shikohabad.
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Glue

Ajax Products Ltd.	...	Madras.
National Sand Paper Mills (India) Ltd.	...	Ghaziabad.

Gramophone Needles

Indian Clock Manufacturing Co., Ltd.	...	Jamshedpur.
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Gramophones, Trunk & Suitcase Accessories

National Metal Industries Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.

Grease Cups (Lubricators)

Leipzig Chemical & Engineering Works	...	Calcutta.
New Standard Engineering Co., Ltd.	...	Bombay.

Grinding Machines

Hind Machines Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Chuttan Lall Mattu Mal	...	Delhi.
Hanuman Engineering Works Ltd.	...	Calcutta.

H**Hack Saw Machines**

Mysore Kirloskar Ltd.,	...	Mysore.
New Standard Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hanuman Engineering Works Ltd.	...	Calcutta.

H—Contd.

Hammers (Steel)

• Mukand Iron & Steel Works Ltd. ... Bombay.

Hardware (Building)

Mapara Parekh & Co. ... Bombay.

Heaters

Khemchand Rajkumar ... Jullunder City.

Heat Exchanger

Jyoti Ltd. ... Baroda.
Liluah Iron Works ... Howrah.

Heat Measuring Instruments

Kaycee Industries Ltd. ... Bombay.

Hinges

Ram Saran Dass Aggarwal & Sons ... Jullunder City.
Amin Chand Payarelal ... Jullunder City.
New Standard Engineering Co., Ltd. ... Bombay.
Agarwal Iron Works ... Agra.
Leipzieg Chemical & Engineering Works ... Calcutta.
Sree Gopal Iron Works ... Calcutta.
D. K. Das & Co., Ltd. ... Howrah.

Hollow Wares

Khem Chand Rajkumar ... Jullunder City.
Aminchand Payarelal ... Jullunder City.

Home Furniture

Godrej & Boyce Manufacturing Co., Ltd Bombay.

Hoops & Strips

J. K. Iron & Steel Co., Ltd. Kanpur.
(South India).
Mysore Iron & Steel Works Bhadravati
Ludhiana Steel Rolling Mills Ludhiana.
Mukand Iron & Steel Works Ltd. Bombay.
Aminchand Bholanath Jullunder City.

Horns (Alu. Loud Speaker for)

Jeewanlal (1929) Ltd. Calcutta.

H—Contd.**Hosiery Machinery**

Paul's Engineering Co.

Howrah.

Hospital Furniture

Ajax Products Ltd.	...	Madras.
Orient Industrial Engineering Co., Ltd.	...	Calcutta.
Kirloskar Bros. Ltd.	...	Satara.
Steel Equipment & Construction Ltd.	...	Calcutta.
Bungo Steel Furniture Ltd.	...	Calcutta.
Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Steel Products Ltd.	...	Calcutta.
Harbans Lal Malhotra & Sons, Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Tin Printing & Metal Works Ltd.	...	Delhi.
Anandram Mahadcolal	...	Calcutta.
East India Steel Works Ltd.	...	Calcutta.

Hurricane Lanterns

Raghu Engineering Works Ltd.	...	Delhi.
Jay Engineering Works Ltd.	...	24 Parganas.
Ogale Glass Works Ltd.	...	Satara.
Harbanslal Malhotra & Sons, Ltd.	...	Calcutta.

I**Ice Box**

Aminchand Payarejal	...	Jullunder City.
Khemchand Rajkumar	...	Jullunder City.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.
Tin Printing & Metal Works Ltd.	...	Delhi.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Kapurthala Industries	...	Kapurthala.
Radha Govind Industries Ltd.	...	Mathura (U.P.).

Ice Cream Freezers

Aminchand Bholanath	...	Jullunder City.
Aminchand Payarejal	...	Jullunder City.

Industrial Plant & Machinery**(a) Cement Machinery Equipment & Spares**

Mukand Iron & Steel Works Ltd.	...	Bombay.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.

(b) Ice Machinery & its Parts

Kapurthala Industries Ltd.		Kapurthala.
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(c) Mining Machinery

Jas. Alexander & Co., Ltd.	...	Calcutta.
Hind Machines, Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.

(d) Oil Engines

Cooper Engineering Ltd.	...	Satara Road.
Kirloskar Brothers, Ltd.	...	Satara.
Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.

(e) Oil Refineries

Jyoti Ltd.	...	Baroda.
Vasant Industrial & Engineering Works	...	Bombay.
Liluah Iron Works	...	Howrah.

(f) Plants (Rice, Dal, Barley, Oats & Flour & Spares)

Leipzig Chemical & Engineering Works	...	Calcutta.
Bharat Iron & Steel Corporation	...	Howrah.
Radha Govind Industries Ltd.	...	Mathura (U.P.).

(g) Power Looms and Engines

Kirloskar Brothers, Ltd.	...	Satara.
Cooper Engineering, Ltd.	...	Satara Road.
Jas. Alexander & Co., Ltd.	...	Calcutta.

(h) Pulp and Paper Machinery

Vasant Industrial & Engineering Works	...	Bombay.
Hazra Engineering Works	...	Calcutta.
Garlick & Co.	...	Bombay.
Hind Tank Manufacturing Co.	...	Bombay.

I—Contd.**(i) Soap-making Machinery**

Hazra Engineering Works	...	Calcutta.
D. K. Dass & Co., Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.
Jyoti Ltd.	...	Baroda.
Liluah Iron Works	...	Howrah.

(j) Soap-Plants

Jyoti Ltd.	...	Baroda.
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(k) Sugar Mill Machinery Equipments & Spares

D. K. Dass & Co., Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.
Mukand Iron & Steel Works Ltd.	..	Bombay.
Jyoti Ltd.	..	Baroda.
Cooper Engineering Ltd.	...	Satara Road.
Hind Machines Ltd.	...	Howrah.
Textile Machinery Corporation Ltd.	...	Calcutta.
Howrah Trading Co., Ltd.	...	Calcutta.
Britannia Engineering Works & Foundry	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Vasant Industrial & Engineering Works	...	Bombay.
Garlick & Co.	...	Bombay.
Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Jay Engineering Works Ltd.	...	24 Parganas.
Indian Malleable Castings Ltd.	...	Calcutta.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.

(l) Tea Processing Machineries

Goodman & Co.	...	Calcutta.
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(m) Textile Machinery Equipments & Spares

Cooper Engineering Ltd.	...	Satara Road.
Hind Machines Ltd.	...	Howrah.
D. K. Das & Co., Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Textile Machinery Corporation Ltd.	...	Calcutta.
Howrah Trading Co., Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.

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A

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I—Contd.

(m) Textile Machinery Equipments & Spares—Contd.

Mukand Iron & Steel Works Ltd.	...	Calcutta.
Britannia Engineering Works & Foundry	...	Calcutta.
Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Calcutta.
Garlick & Co.	...	Bombay.
Jay Engineering Works Ltd.	...	Bombay.
Burjorji Pestonji & Sons Ltd.	...	24 Parganas.
Vasant Industrial & Engineering Works	...	Bombay.
Indian Malleable Castings Ltd.	...	Calcutta.
Vasant Engineering Ltd.	...	Baroda.

(n) Vegetable Ghee Plant

Hind Tank Manufacturing Co.	...	Bombay.
Garlick & Co.	...	Bombay.
Vasant Industrial & Engineering Works	...	Bombay.
Jyoti Ltd.	...	Baroda.
Hind Machines Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.

(o) Wire Nailmaking Machinery

Indian Engineers' Corporation, Ltd.	...	Amritsar.
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(p) Wood and Machine Screw making Machinery

Victor Industries	...	Amritsar.
Indian Engineers' Corporation, Ltd.	...	Amritsar.

Ingots (Virgin Aluminium)

Aluminium Corporation of India Ltd.	...	Calcutta.
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Iron Pressings (Washerman and Tailor)

Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Amin Chand Bhole Nath	...	Jullunder City.
Aminchand Payarela	...	Jullunder City.

Iron Washers

Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Payarela	...	Jullunder City.

Jigger Machines

Burjorji Pestonji & Sons Ltd. ... Bombay.

K

Knitting Machinery

Paul's Engineering Co. .. Howrah.

L

Laboratory Apparatus

Kaycee Industries Ltd. ... Bombay.

Lathes

Mysore Kirloskar Ltd. ... Mysore.
 India Machinery Co., Ltd. ... Calcutta.
 Investa Machine Tools & Engineering
 Co., Ltd. ... Bombay.
 Hind Machines Ltd. ... Howrah.
 Jas. Alexander & Co., Ltd. ... Calcutta.
 Hanuman Engineering Works Ltd. ... Calcutta.
 Paul's Engineering Co. ... Howrah.

Lathe Chucks

Peepul Iron & Steel Industries Ltd. ... Kanpur.
 Paul's Engineering Co. ... Howrah.

Light Reflectors & Shades (A1.)

Jeewanlal (1929) Ltd. ... Calcutta.

Locks (All kinds)

Godrej & Boyce Manufacturing Co., Ltd. ... Bombay.
 Aminchand Bholanath ... Jullunder City.
 Ajax Products Ltd. ... Madras.

Lockers

Godrej & Boyce Manufacturing Co., Ltd. ... Bombay.

L—Contd.**Locomotives**

Tata Locomotive & Engineering Co., Ltd. ... Tatanagar.

Lubricators

Peepul Iron & Steel Industries Ltd. ... Kanpur.
 New Standard Engineering Co., Ltd. ... Bombay.
 Leipzig Chemical & Engineering Works ... Calcutta.

M**Machines (Chaff Cutter)**

Amin Chand Payarclal ... Jullunder City.

Machine Cut Wheels

Burjorji Pestonji & Sons Ltd. ... Bombay.

Machine Parts

D. K. Dass & Co., Ltd. ... Howrah.
 Peepul Iron & Steel Industries Ltd. ... Kanpur.
 Engineering Works of India Ltd. ... Calcutta.
 Cooper Engineering Ltd. ... Satara Road.
 Hind Machines Ltd. ... Howrah.
 Jas. Alexander & Co., Ltd. ... Calcutta.
 Textile Machinery Corporation Ltd. ... Calcutta.
 Howrah Trading Co., Ltd. ... Calcutta.
 Steel Products Ltd. ... Calcutta.
 Mukand Iron & Steel Works Ltd. ... Bombay.
 Britannia Engineering Works & Foundry ... Calcutta.
 B. M. Singh & Son ... Calcutta.
 Castings Corporation (India) Ltd. ... Howrah.
 Jamshedpur Engineering & Machine Manufacturing Co., Ltd. ... Tatanagar.
 P. N. Dutt & Co., Ltd. ... Calcutta.
 Bhartia Electric Steel Co., Ltd. ... Calcutta.
 Hind Tank Manufacturing Co. ... Bombay.
 Garlick & Co. ... Bombay.
 Indian Hume Pipe Co., Ltd. ... Bombay.
 Jay Engineering Works Ltd. ... 24 Parganas.
 Usha Bolt & Nut & Co. ... Calcutta.
 Jagatjit Engineering Works ... Kapurthala.

M—Contd.**Machine Parts—Contd.**

Agarwal Iron Works	...	Agra.
Bindeswari Iron & Steel Corporation	...	Calcutta.
Kapurthala Industries Ltd.	...	Kapurthala.
Bharat Iron & Steel Corporation	...	Howrah.
Jogendra Nath Chatterjee & Sons	...	Calcutta.
Thakurdass Sureka	...	Howrah.

Machine (for making sewain)

Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
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Machine Tools

Cooper Engineering Ltd.	...	Satara Road.
Mysore Kirloskar Ltd.	...	Mysore.
Indian Engineers' Corporation Ltd.	...	Amritsar.
Hind Machines Ltd.	...	Howrah.
Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
India Machinery Co., Ltd.	...	Calcutta.
P. N. Dutt & Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Metropole Works	...	Amritsar.
Jas. Alexander & Co., Ltd.	...	Calcutta.
New Standard Engineering Co., Ltd.	...	Bombay.
A. R. Shining Foundry & Engineering Works.	...	Batala (Pb.).
Agricultural Industries	...	Batala (Pb.).
Bubna Engineering Co.	...	Calcutta.
Paul's Engineering Co.	...	Howrah.
Shree Krishna Ltd.	...	Calcutta.
Vasant Engineering Ltd.	...	Baroda.
Machine Manufacturing Co., Ltd.	...	Howrah.

Man-holes

Thakurdass Sureka	...	Howrah.
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Meehanite Metal

Cooper Engineering Ltd.	...	Satara Road.
Jay Engineering Works Ltd.	...	24 Parganas.
Indian Hume Pipe Co., Ltd.	...	Bombay.

Metal Founders

Indian Commerce & Industries Co., Ltd.	...	Madras.
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COOPER ENGINEERING LTD.

SATARA ROAD.

India's industrial needs have expanded considerably that with the new national set-up; our country's manufacturers of Machinery and industrial equipment will now receive the greatest fill-up. To meet the demands, we manufacture the following, to the highest standard of specification.

DIESEL OIL ENGINES: Being the largest manufacturers of Internal Combustion Engines in India, we can supply Diesel Engines for Industrial purposes both single and multi-cylinder types—from 8 B. H. P. to 256 B. H. P. The engines are all fourstroke types.

Modelled on the largest designs, they are easy to install, economical in fuel consumption, simple in design, & strongly built, skilled attention is unnecessary.

MACHINE TOOLS: We also manufacture the following to the required specification :

Shaping Machines.
Capstan Lathes.
Sliding, Surfacing & Screw Cutting Lathes.
Drilling Machines upto 1½" capacity.

All Machine Tools can be supplied either for belt drive or electric drive.

TEXTILE MACHINERY: Cooper Power Looms, Dobbies and Drop Boxes are working efficiently in many mills and they are well known in the country.

AGRICULTURAL MACHINERY: We have given careful attention to the vast agricultural needs and particularly of the special requirements of the Indian farmer. Our agricultural implements and machinery have been designed and built to the exacting needs of the farmer.

CASTINGS. We manufacture all types of castings and we can supply your exact requirements.

General Engineering Castings, Wear Resisting Castings, Heat Resisting Castings, Corrosion Resisting Castings, etc. can all be supplied by us to suit your various requirements.

MEEHANITE. This high Duty Iron is manufactured in our factory and we are the sole licensees for India, Pakistan, Burma & Ceylon for this famous brand.

Sublicensees for Mechanite High Duty Irons have been given to the following Firms :

M/s. Indian Hume Pipe Co., Ltd.,	Wadala,	-	Bombay.
M/s. Jessop & Co., Ltd.,	93, Netaji Subhas Road,	-	Calcutta.
M/s. Jay Engineering Works	-	-	Calcutta.
M/s. Binny & Co., (Madras) Ltd.	-	-	Madras.

Please write to us or call on us for fuller details of your requirements.

COOPER ENGINEERING LTD.,
Satara Road, (M. S. M. Rly.)

M—Contd.**Mild Steel Sections (Bars, Rods, Squares, Flats & Wires)**

Singh Engineering Works Ltd.	...	Kanpur.
Radhey Lal Steel Rolling Mills	...	Kanpur.
Ludhiana Steel Rolling Mills	...	Ludhiana.
Mysore Iron & Steel Works	...	Bhadravati (South India).
Tata Iron & Steel Co., Ltd.	...	Calcutta.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
J. K. Iron & Steel Co., Ltd.	...	Kanpur.
Mukand Iron & Steel Works Ltd.	...	Bombay.
National Iron & Steel Co., Ltd.	...	Calcutta.
National Rolling Mills Ltd.	...	Calcutta.
Shree Hanuman Steel Rolling Mills	...	Calcutta.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Aminchand Bholanath	...	Jullunder City.
Agarwal Iron Works	...	Agra.
R. Tarruck & Co.	...	Calcutta.

Milling Machines

Mysore Kirloskar Ltd.	...	Mysore.
Hind Machines Ltd.	...	Howrah.

Mining Machinery

(See Industrial Plant & Machinery)

Motor Cars

Hindustan Motors Ltd.	...	Calcutta.
Premier Automobiles Ltd.	...	Bombay.
Motor House (Gujerat) Ltd.	...	Bombay.

Motor Car Ignition Cables

National Insulated Cable Co. of India Ltd.	...	Calcutta.
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Motor Door Locks

Precious Die Works	...	Bombay.
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Motor Parts

Premier Automobiles Ltd.	...	Bombay.
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M—Contd.**Motor Plates & Numbers
(Aluminium)**

(See non-ferrous metal & alloys)

Motor Starters

Electric Construction & Equipment Co., Ltd. Calcutta.

Moulding (Cast Iron, Brass & Nickel)

Ram Saran Das Aggarwal & Sons	...	Jullunder City.
Jas. Alexander & Co., Ltd.	...	Calcutta.

N**Nails (Wire)**

Indian Steel & Wire Products Ltd.	...	Calcutta.
National Screw & Wire Products Ltd.	...	Calcutta.
Indian Engineers' Corporation Ltd.	...	Amritsar.
Victor Industries	...	Amritsar.
Kapurthala Industries Ltd.	...	Kapurthala.
Shree Krishna Limited	...	Calcutta.

Non-ferrous metals and alloys**(a) alloys and castings**

Jaipur Metal Industries Ltd.	...	Jaipur.
National Screw & Wire Products Ltd.	...	Calcutta.
Indian Smelting & Refining Co., Ltd.	...	Bombay.
Saru Smelting & Refining Corporation Ltd.	...	Meerut.
Indian Standard Metal Co., Ltd.	...	Bombay.
D. K. Das & Co., Ltd.	...	Howrah.
Castings Corporation (India) Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Binani Metal Works Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Aminchand Payarelal	...	Jullunder City.
Chhuttanlall Mattumal	...	Delhi.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.
J. K. Iron & Steel Co., Ltd.	...	Kanpur.

N—Contd.**(b) Aluminium**

• Aluminium Corporation of India Ltd.	...	Calcutta
Jeewanlal (1929) Ltd.	...	Calcutta
Indian Standard Metal Co., Ltd.	...	Bombay

(c) Aluminous Chemicals

Aluminium Corporation of India Ltd.	...	Calcutta.
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(d) Aluminium Circles

Aluminium Corporation of India Ltd.	...	Calcutta.
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(e) Aluminium Sheets

Kamani Metals & Alloys Ltd.	...	Bombay.
Jeewanlal (1929) Ltd.	...	Calcutta.
Aluminium Corporation of India Ltd.	...	Calcutta.

(f) Antimony Regulas

Star Metal Refinery	...	Bombay.
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(g) Antimony Sulphide

Star Metal Refinery	...	Bombay.
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(h) Brass Plates

Kamani Metals & Alloys Ltd.	...	Bombay.
Binani Metal Works Ltd.	...	Calcutta.
Hindustan Metal Refinery & Rolling Mills	...	Madras.

(i) Brass Sheets

Kamani Metal & Alloys Ltd.	...	Bombay.
Binani Metal Works Ltd.	...	Calcutta.
Hindustan Metal Refinery & Rolling Mills	...	Madras.

(j) Copper Sheets

Kamani Metals & Alloys Ltd.	...	Bombay.
Hindustan Metal Refinery & Rolling Mills	...	Madras.

(k) Non-ferrous Wires & Rods

Jaipur Metal Industries Ltd.	...	Jaipur.
National Rolling Mills Ltd.	...	Calcutta.
National Screw & Wire Products Ltd.	...	Calcutta.
Jayant Metal Manufacturing Co.	...	Bombay.
Jeewanlal (1929) Ltd.	...	Calcutta.
Indian Standard Metal Co., Ltd.	...	Bombay.

O

Office Desk Equipment

Aluminium Corporation of India Ltd.	...	Calcutta.
Jeewanlal (1929) Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Tin Printing & Metal Works Ltd.	...	Delhi.

Office Equipment (Steel)

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
East India Steel Works Ltd.	...	Calcutta.

Office Furniture

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Aminchand Payarelal	...	Jullunder City.
Tin Printing & Metal Works Ltd.	...	Delhi.
Ajax Products Ltd.	...	Madras.

Oil Expellers

Vasant Engineering Ltd.	...	Baroda.
Radha Govind Industries Ltd.	...	Mathura (U.P.)

Oil Mill Engines (Diesel)

(See Industrial Plant & Machinery)

Oil Mill Ghannies & Various parts

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Howrah Trading Co., Ltd.	...	Calcutta.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Bindeswari Iron & Steel Corporation	...	Calcutta.
Hanuman Engineering Works Ltd.	...	Calcutta.
Liluah Iron Works	...	Howrah.
Radha Govind Industries Ltd.	...	Mathura (U.P.)

Oil Refineries

Vasant Industrial & Engineering Works	...	Bombay.
Jyoti Ltd.	...	Baroda.

P

Pails (Milk)

Aminchand Payarelal	...	Jullunder City.
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Paint & Varnishes

Jay Engineering Works Ltd.	...	24 Parganas.
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P—Contd.**Paint-Mixers**

c Machine Manufacturing Co., Ltd. ... Howrah.

Pans (Cooking & Cast Iron)

D. N. Singha & Co., Ltd.	...	Howrah.
Star Iron Works	...	Lilloah.
Khem Chand Raj Kumar	...	Jullunder City.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Hind Machines Ltd.	...	Howrah.
Aminchand Payarelal	...	Jullunder City.
Hanuman Engineering Works Ltd.	...	Calcutta.
Atta's Iron Foundry	...	Howrah.
Goodman & Co.	...	Calcutta.
Jogendra Nath Chatterjee & Sons	...	Calcutta.
Kapurthala Industries Ltd.	...	Kapurthala.
Radha Govind Industries Ltd.	...	Mathura (U.P.)
Shree Krishna Ltd.	...	Calcutta.
Thakurdass Sureka	...	Howrah.

Pans (Sugar)

Sirgh Engineering Works Ltd.	...	Kanpur.
D. K. Dass & Co., Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Steel Products Ltd.	...	Calcutta.
Mukand Iron & Steel Works Ltd.	...	Bombay.
Jyoti Ltd.	...	Baroda.
Cooper Engineering Ltd.	...	Satara Road.
Hind Machines Ltd.	...	Howrah.
Textile Machinery Corporation Ltd.	...	Calcutta.
Howrah Trading Co., Ltd.	...	Calcutta.
Britannia Engineering Works & Foundry	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Vasant Industrial & Engineering Works	...	Bombay.
Garlick & Co.	...	Bombay.
Khem Chand Raj Kumar	...	Jullunder City.
Castings Corporation (India) Ltd.	...	Howrah.
Ludhiana Steel Rolling Mills	...	Ludhiana.
Jay Engineering Works Ltd.	...	24 Parganas.
Aminchand Payarelal	...	Jullunder City.
Agarwal Iron Works	...	Agra.
Hanuman Engineering Works Ltd.	...	Calcutta.
Atta's Iron Foundry	...	Howrah.
Agricultural Industries	...	Batala (Pb.)
Radha Govind Industries Ltd.	...	Mathura.

P—Contd.**Panel Pins**

Kapurthala Industries Ltd.	...	Kapurthala.
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Paper & Card-board Cutting Machine

Jyoti Ltd.	...	Baroda.
Paul's Engineering Co.	...	Howrah.

Pedestals (Ring Oiling)

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Penholders, Nibs, Pencils, etc.

F. N. Gooptu & Co.	...	Calcutta.
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Persian Wheels

Aminchand Payarelal	...	Jullunder City.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Banta Singh Shamir Singh	...	Jullunder City.
Agarwal Iron Works	...	Agra.

Pipes

Indian Hume Pipe Co., Ltd.	...	Bombay.
Castings Corporation (India) Ltd.	...	Howrah.
Star Iron Works	...	Lillooah.
Thakurdass Sureka	...	Howrah.

Pipes (Reinforced Concrete)

Indian Hume Pipe Co., Ltd.	...	Bombay.
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Pipes (Iron)

Garlick & Co.	...	Bombay.
Mysore Iron & Steel Works	...	Bhadravati (Mysore).
Tata Iron & Steel Co., Ltd.	...	Calcutta.
Reliable Water Supply Service of India Ltd.	...	Lucknow.
Indian Hume Pipe Co., Ltd.	...	Bombay.
D. N. Singha & Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Burjorji Pestonji & Sons Ltd.	...	Bombay.
National Iron & Steel Co., Ltd.	...	Calcutta.

Pipe Cutters

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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P—Contd.

Pipe Fittings

Aminchand Payarelal	...	Jullunder City.
Leipzig Chemical & Engineering Works	...	Calcutta.
Burjorji Pestonji & Sons Ltd.	...	Bombay.
Atta's Iron Foundry	...	Howrah.
Development of Metal Industries Ltd.	...	Calcutta.
Thakurdass Surcka	...	Howrah.

Pipe Vices

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Pipe Wrenches

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Planning Machines

Mysore Kirloskar Ltd.	...	Mysore.
India Machinery Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hanuman Engineering Works Ltd.	...	Calcutta.

**Plants (Rice, Dal, Barley, Oats
& Flour for)**

(See Industrial Plant & Machinery)

Plates (Brass)

(See non-ferrous metals & alloys)

Plate Bending Rolls (hand operated)

New Standard Engineering Co., Ltd	...	Bombay.
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Plummer Blocks

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Chuttan Lal Mattu Mal	...	Delhi.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Polishing Machines

Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd,	...	Calcutta,

P—Contd.**Porcelain Accessories**

Khem Chand Raj Kumar ... Jullunder City.

Power looms and Engines,

(See Industrial Plant and Machinery)

Power Transmission Appliances

D. K. Dass & Co., Ltd. ... Howrah.

Pressings

Development of Metal Industries Ltd. ... Calcutta.

Presses (Crank)

Hind Machines Ltd. ... Howrah.

P. N. Dutt & Co., Ltd. ... Calcutta.

New Standard Engineering Co., Ltd. ... Bombay.

Chhuttan Lall Mattu Mal ... Delhi.

Presses (Filter)

Jyoti Ltd. ... Baroda.

Presses (Power)

Machine Manufacturing Co., Ltd. ... Howrah.

Press-Tools

Precious Die Works ... Bombay.

Pressure Vessels

Liluah Iron Works ... Howrah.

Presses (Hydraulic & Mechanical)

Hind Machines Ltd. ... Howrah.

Mysore Kirloskar Ltd. ... Mysore.

Chhuttan Lall Mattu Mal ... Delhi.

Singh Engineering Works Ltd. ... Kanpur.

P. N. Dutta Co., Ltd. ... Calcutta.

Jas. Alexander & Co., Ltd. ... Calcutta.

New Standard Engineering Co., Ltd. ... Bombay.

Liluah Iron Works ... Howrah.

P—Contd.**Printing Machinery**

India Machinery Co., Ltd.	...	Calcutta.
Vasant Industrial & Engineering Works	...	Bombay.
Hanuman Engineering Works Ltd.	...	Calcutta.

Pulleys

Hind Tank Manufacturing Co.	Bombay.
Jas. Alexander & Co., Ltd.	Calcutta.
Bhartia Electric Steel Co., Ltd.	Calcutta.
Chhuttan Lall Mattu Mal	Delhi.
Peepul Iron & Steel Industries Ltd.	Kanpur.
D. K. Das & Co., Ltd.	Howrah.

Pulleys (W. I. Spilit)

Chhuttan Lall Mattu Mal	Delhi.
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Pumping Sets

Electric Construction & Equipment Co., Ltd.	Calcutta.
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Pumps (Bore hole)

Jyoti Ltd.	Baroda.
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Pumps (Boiler feed)

Jyoti Ltd.	Baroda.
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Pumps (Centrifugal)

Jyoti Ltd.	Baroda.
Kirloskar Brothers Ltd.	Satara.
Reliable Water Supply Service of India Ltd.	Lucknow.
Kaycee Industries Ltd.	Bombay.
Jas. Alexander & Co., Ltd.	Calcutta.
Metropole Works	Amritsar.
New Standard Engineering Co., Ltd.	Bombay.

Pumps (Domestic power)

Jyoti Ltd.	...	Baroda.
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P—Could.**Pumps (hand)**

D. N. Singha & Co., Ltd.	...	Howrah.
Jyoti Ltd.	...	Baroda.
Kirloskar Brothers Ltd.	...	Satara.
Castings Corporation (India) Ltd.	...	Howrah.
Bharat Iron & Steel Corporation	...	Howrah.

Punching Presses

New Standard Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Mysore Kirloskar Ltd.	...	Mysore.

R**Railings**

Burjorji Pestonji & Sons Ltd.	...	Bombay.
Bindeswari Iron & Steel Corporation	...	Calcutta.
Atta's Iron Foundry	...	Howrah.

Railings (Aluminium)

Jeewanlal (1929) Ltd.	...	Calcutta.
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Railway Signalling & Interlocking Apparatus

India Electric Works Ltd.	...	Calcutta.
New Standard & Engineering Co., Ltd.	...	Bombay.
D. K. Das & Co., Ltd.	...	Howrah.

Railway Stores

Mukand Iron & Steel Works Ltd.	...	Bombay.
Kamani Engineering Corporation Ltd.	...	24 Parganas.
Jay Engineering Works Ltd.	...	24 Parganas.
D. K. Das & Co., Ltd.	...	Howrah.
India Electric Works Ltd.	...	Calcutta.
Singh Engineering Works Ltd.	...	Kanpur.
Tata Iron & Steel Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.
Bhartia Electric Steel Co., Ltd.	...	Calcutta.

R—Contd.**Railway Stores—Contd.**

Indian Standard Metal Co., Ltd.	...	Bombay.
Garlick & Co.	...	Bombay.
Indian Hume Pipe Co., Ltd.	...	Bombay.
B. M. Singh & Son	...	Calcutta.
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Indian Malleable Castings Ltd.	...	Calcutta.

Rammers

Agarwal Iron Works	...	Agra.
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Ratchet Braces

Pecpul Iron & Steel Industries Ltd.	...	Kanpur.
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Repair Materials

Fire Stone Tyre & Rubber Co. of India Ltd.	...	Bombay.
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Re-Rolled Steel

Bhartia Electric Steel Co., Ltd.	...	Calcutta.
Indian Hume Pipe Co., Ltd.	...	Bombay.
J. K. Iron & Steel Co., Ltd.	...	Kanpur.
Mukand Iron & Steel Works Ltd.	...	Bombay.
National Iron & Steel Co., Ltd.	...	Calcutta.
National Rolling Mills Ltd.	...	Calcutta.
Radhey Lal Steel Rolling Mill	...	Kanpur.
Shree Hanuman Steel Rolling Mills	...	Calcutta.
Singh Engineering Works Ltd.	...	Kanpur.
Aminchand Bholanath	...	Jullunder City.
Ludhiana Steel Rolling Mills	...	Ludhiana.
Agarwal Hardware Works Ltd.	...	Calcutta.
Bengal Rolling Mills Ltd.	...	Howrah.
R. Tarruck & Co.	...	Calcutta.
Shree Laxmi Iron & Steel Works Ltd.	...	Calcutta.

Rivets

Associated Contractors Ltd.	...	24-Parganas.
Jeewanlal (1929) Ltd.	...	Calcutta.
Ludhiana Steel Rolling Mills	...	Ludhiana.
Aminchand Payarelal	...	Jullunder City.
Indian Engineers' Corporation Ltd.	...	Amritsar.
Victor Industries	...	Amritsar.
Universal Screw Factory	...	Chhcharta.
Indian Steel & Wire Products Ltd.	...	Calcutta.

R—Contd.**Rivets—Contd.**

Khem Chand Rajkumar	...	Jullunder City.
Goodman & Co.	...	Calcutta.
D. K. Das & Co., Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.
Ram Saran Dass Aggarwal & Sons	...	Jullunder City.
Aminchand Bholanath	...	Jullunder City.
Jagatjit Engineering Works	...	Kapurthala.

Road Rollers

Cooper Engineering Ltd.	...	Satara Road.
Howrah Trading Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.

Rods (Hot-Rolled : Black Copper)

National Rolling Mills Ltd.	...	Calcutta.
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Rolls

Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
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Rolling Mills

Jamshedpur Engineering & Machine Manufacturing Co., Ltd.	...	Tatanagar.
Hind Machines Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Ropeways (Mounting for)

Howrah Trading Co., Ltd.	...	Calcutta.
Garlick & Co.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Rotary Core Making Machines

Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
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"AN EXTRA FAN AT NO EXTRA COST"



says this housewife



1 *We always felt that an additional fan would make our drawing room really cool and comfortable.*

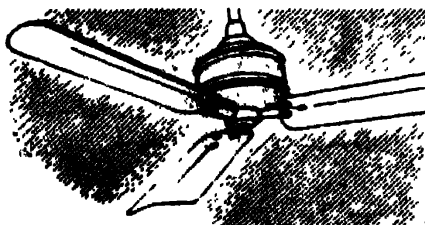
2 BUT—there was the question of cost. A friend—an electrician—suggested replacing the old fans with new Orient fans.



Orient Fans



3 *We did so and though we have one more fan in the drawing room it costs us no more in electric current consumption.*



★ The noiseless efficiency of Orient fans is based on sound constructional features. Fitted with ball bearings and aluminium blades they give maximum air displacement with minimum current consumption.

Issued by the
Calcutta Electrical Mfg. Co., Ltd.,
33, Netaji Subhas Rd., Calcutta

S**Safes & Strong Doors**

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Bungo Steel Furniture Ltd.	...	Calcutta.
Ajax Products Ltd.	...	Madras.
East Indian Steel Works Ltd.	...	Calcutta.
Goodman & Co.	...	Calcutta.
Shree Laxmi Iron & Steel Works Ltd.	...	Calcutta.

Safe Deposit & Vault Equipment

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
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Salamanders

Aminchand Bholanath	...	Jullunder City.
Aminchand Payarelal	...	Jullunder City.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Sanitary Equipment & Fittings

Indian Enamel Works Ltd.	...	Bombay.
Madras Enamel Works Ltd.	...	Madras.
Britannia Engineering Works & Foundry	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.
Hind Tank Manufacturing Co.	...	Bombay.
Aminchand Bholanath	...	Jullunder City.
Atta's Iron Foundry	...	Howrah.
Bharat Iron & Steel Corporation	...	Howrah.
Jogendra Nath Chatterjee & Sons	...	Calcutta.

Screws (Machine & Wood)

Indian Engineers' Corporation Ltd.	...	Amritsar.
Universal Screw Factory	...	Howrah.
National Screw & Wire Products Ltd.	...	Calcutta.
Shree Jam Wire Products Co., Ltd.	...	Bombay.
Jagatjit Engineering Works	...	Kapurthala.
Hind Screws Metal Works	...	Delhi.
Victor Industries	...	Amritsar.

Screw Cutting Lathes

Cooper Engineering Ltd.	...	Satara Road.
Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.

*S—Contd.***Screw Cutting Machines**

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Victor Industries	...	Amritsar.
Indian Engineers' Corporation Ltd.	...	Amritsar.
India Machinery Co., Ltd.	...	Calcutta.

Screw Plates

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Screw Presses

P. N. Dutt & Co., Ltd.	...	Calcutta.
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Self-closing Water Taps

Peepul Iron & Steel Industries Ltd.	...	Kanpur.
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Sewing Machine (Hand & Foot)

Jay Engineering Works Ltd.	...	24 Parganas.
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Shafts

Hind Tank Manufacturing Co.	Bombay.
Garlick & Co.	Bombay.
Jas Alexander & Co., Ltd.	Calcutta.

Shaft-Collars

Peepul Iron & Steel Industries Ltd.	Kanpur.
Chhuttan Lal Matu Mal	Delhi.
Jas. Alexander & Co., Ltd.	Calcutta.

Shaft Couplings

Peepul Iron & Steel Industries Ltd.	Kanpur.
Chhuttan Lal Mattu Mal	Delhi.
D. K., Das & Co., Ltd.	Howrah.

Shaping Machines

Cooper Engineering Ltd.	Sansa Road.
Mysore Iron & Steel Works	Bhadravati
	(Mysore)
India Machinery Co., Ltd.	Calcutta.
Machine Mfg. Co., Ltd.	Howrah.

S—Contd.

Shearing & Punching Machines

Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Sheets

Aluminium Corporation of India Ltd.	...	Calcutta.
Jayant Metal Manufacturing Co.	...	Calcutta.
Jeewanlal (1929) Ltd.	...	Calcutta.
Kamani Metals & Alloys Ltd.	...	Bombay.
Hindustan Metal Refinery & Rolling Mills	...	Madras.

Sheets (Aluminium)

(See non-ferrous metals & alloys)

Sheets (Brass)

(See non-ferrous metals & alloys)

Sheets (Copper)

(See non-ferrous metals & alloys)

Sheet Metal Wares

Khem Chand Raj Kumar	...	Jullunder City.
Bharat Sheet Metal Industries Ltd.	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.
Agarwal Hardware Works Ltd.	...	Calcutta.
Ganpatray Ramnarain & Co.	...	Calcutta.
Kapurthala Industries Ltd.	...	Kapurthala.
Shree Krishna Ltd.	...	Calcutta.
D. K. Dass & Co., Ltd.	...	Howrah.

Shipping and Ship Repairing

Scindia Steam Navigation Co., Ltd.	...	Bombay.
Shaparia Dock & Steel Co., Ltd.	...	Bombay.
Bombay Steam Navigation Co., Ltd.	...	Calcutta.
Hind Tank Manufacturing Co.	...	Bombay.

Silicon Sheets

Tata Iron & Steel Co., Ltd.	...	Calcutta.
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S—Contd.**Sliding & Surfacing Lathes**

Cooper Engineering Ltd.	...	Satara Road.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.

Slotting Machines

India Machinery Co., Ltd.	...	Calcutta.
Investa Machine Tools & Engineering Co., Ltd.	...	Bombay.
Machine Mfg. Co., Ltd.	...	Howrah.

Sluice Valves

Chhuttan Lall Mattu Mal	...	Delhi.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.
D. K. Dass & Co., Ltd.	...	Howrah.
Kirloskar Brothers Ltd.	...	Satara.
G. T. R. Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.

Small Tools

Indian Tool Manufacturers Ltd.	...	Bombay.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Bharat Tool Manufacturing Co., Ltd.	...	Bombay.
Kamani Engineering Corporation Ltd.	...	Bombay.
Hind Machines Ltd.	...	Howrah.
Development of Metal Industries Ltd.	...	Calcutta.

Soap Making Machinery

(See Industrial Plant & Machinery)	...
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Soap Plants

(See Industrial Plant & Machinery)	...
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Shovel

Hanuman Engineering Works Ltd.	...	Calcutta.
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Spindles

Mukand Iron & Steel Works Ltd.	...	Bombay.
Textile Machinery Corporation Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.

S—Contd.

Split Pulleys

Peepul Iron & Steel Industries Ltd. ... Kanpur.

Spraying Guns (Metal)

Metal Spraying Products ... Calcutta.

Spray Pump

Peepul Iron & Steel Industries Ltd. ... Kanpur.

Spring Steel

Mukand Iron & Steel Works Ltd. ... Bombay.

Bhartia Electric Steel Co., Ltd. ... Calcutta.

Spring Washers

Hind Tank Manufacturing Co. ... Bombay.

Stacking Machines

New Standard Engineering Co., Ltd. ... Bombay.

Stair Case (Spiral)

D. N. Singha & Co., Ltd. ... Howrah.

Jas. Alexander & Co., Ltd. ... Calcutta.

New Standard Engineering Co., Ltd. ... Bombay.

Atta's Iron Foundry ... Howrah.

Stampings (Metal)

Development of Metal Industries Ltd. ... Calcutta.

Stationery Racks (Aluminium)

Jeewanlal (1929) Ltd. ... Calcutta.

Steam Jet Ejector

Jyoti Ltd. ... Baroda.

Steam Traps

New Standard Engineering Co., Ltd. ... Bombay.

S—Contd.**Steel (Alloy & Tool)**

Mukand Iron & Steel Works Ltd.	Bombay.
Tata Iron & Steel Co., Ltd.	Calcutta.
Bhartia Electric Steel Co., Ltd.	Calcutta.
Mysore Iron & Steel Works	Bhadravali (Mysore).
Indian Hume Pipe Co., Ltd.	Bombay.

Steel Balls

National Bearing Co., Ltd.	Calcutta.
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Steel Security Equipment

Kirloskar Brothers Ltd.	Satara.
Steel Equipment & Construction Ltd.	Calcutta.
Ajax Products Ltd.	Madras.
Bungo Steel Furniture Ltd.	Calcutta.
Godrej & Boyce Manufacturing Co Ltd.	Bombay.
Steel Products Ltd.	Calcutta.
Harbans Lal Malhotra & Sons Ltd.	Calcutta.
Hind Tank Manufacturing Co.	Bombay.
Jas. Alexander & Co., Ltd.	Calcutta.
East India Steel Works Ltd.	Calcutta.
Goodman & Co.	Calcutta.
Shree Laxmi Iron & Steel Works Ltd.	Calcutta.

Storage Bins

Godrej & Boyce Manufacturing Co., Ltd.	Bombay.
Ajax Products Ltd.	Madras.

Storage Racks (Steel)

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
East India Steel Works Ltd.	...	Calcutta.
Ajax Products Ltd.	...	Madras.

Storage Tanks

Jyoti Ltd.	...	Baroda.
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Strainers

Reliable Water Supply Service of India Ltd.	Lucknow.	
Hind Tank Manufacturing Co.	...	Bombay.
Metropole Works	...	Amritsar.
Garlick & Co.	...	Bombay.

S—Contd.

Strong Rooms & Doors

Godrej & Boyce Manufacturing Co., Ltd. Bombay.

Structural Works

Kushumika Iron Works Ltd.	Calcutta.
Victory Engineering Works	Calcutta.
Hindustan Construction Co., Ltd.	Bombay.
Steel Equipment & Construction Ltd.	Calcutta.
Structural Engineering Works Ltd.	Bombay.
Howrah Trading Co., Ltd.	Calcutta.
Steel Products Ltd.	Calcutta.
Singh Engineering Works Ltd.	Kanpur.
Garlick & Co.	Bombay.
Jas. Alexander & Co., Ltd.	Calcutta.
Hind Machines Ltd.	Bombay.
Hind Tank Manufacturing Co.	Bombay.
Mapara Parekh & Co.	Bombay.
Mysore Iron & Steel Works	Bhadravati
	(Mysore).
Metropole Works	Amritsar.
Indian Hume Pipe Co., Ltd.	Bombay.
Shaparia Dock & Steel Co., Ltd.	Bombay.
Burjorji Pestonji & Sons Ltd.	Bombay.
Indian Commerce & Industries Co., Ltd.	Madras.
Agarwal Hardware Works Ltd.	Calcutta.
New Standard Engineering Co., Ltd.	Bombay.
Dukhinawar Sarkar & Bros. Ltd.	Calcutta.
Sree Gopal Iron Works	Calcutta.
Sewri Engineering Works	Bombay.
National Iron & Steel Co., Ltd.	Calcutta.

Sugar Mill Machinery & Spares

(See Industrial Plant & Machinery)

Suitcases

Ram Saran Dass Aggarwal & Sons	Jullunder City.
Amin Chand Payare Lal	Jullunder City.
Dukhinawar Sarkar & Bros. Ltd.	Calcutta.

Suitcases (Aluminium)

Jecwanlal (1929) Ltd.	Calcutta.
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S—Contd.

Switch Boards

Electric Construction & Equipment Co., Ltd. Calcutta.

Switch Gear

Electric Construction & Equipment Co., Ltd. Calcutta.

Swivel Vices

Peepul Iron & Steel Industries Ltd. ... Kanpur.

Syphons (Pressure Gauge)

Precious Die Works ... Bombay.

T

Tacks

Kapurthala Industries Ltd. Kapurthala.

Tanks

Hind Tank Manufacturing Co.	Bombay.
United Iron & Steel Corporation Ltd.	Calcutta.
Structural Engineering Works Ltd.	Bombay.
Singh Engineering Works Ltd.	Kanpur.
Steel Products Ltd.	Calcutta.
Jas. Alexander & Co., Ltd.	Calcutta.
Hind Machines Ltd.	Howrah.
Jyoti Ltd.	Baroda.
Mapara Parekh & Co.	Bombay.
Indian Hume Pipe Co., Ltd.	Bombay.
Shaparia Dock & Steel Co., Ltd.	Bombay.
Howrah Trading Co., Ltd.	Calcutta.
Garlick & Co., Ltd.	Bombay.
Tin Printing & Metal Works Ltd.	Delhi.
New Standard Engineering Co., Ltd.	Bombay.
Radha Govind Industries Ltd.	Mathura.

Taps & Dies

Peepul Iron & Steel Industries Ltd.	Kanpur.
Bahart Tool Manufacturing Co., Ltd.	Bombay.

T—Contd.**Tap Wrenches**

Peepul Iron & Steel Industries Ltd.	Kanpur.
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Technical Precision Instruments

Kaycee Industries Ltd.	Bombay.
India Electric Works Ltd.	Calcutta.
Jas. Alexander & Co., Ltd.	Calcutta.

Technical Precision Instruments & Accessories

India Electric Works Ltd.	Calcutta.
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Telegraph Pole Fittings

D. K. Das & Co., Ltd.	Howrah.
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Telephone Sets & Accessories

Jay Engineering Works Ltd.	24 Parganas.
India Electric Works Ltd.	Calcutta.

Textile Machinery & Spare Parts

(See Industrial plant and machinery)

Tin-Can Manufacturing Machines

P. N. Dutt & Co., Ltd.	Calcutta.
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Tin Containers

Tin Printing & Metal Works Ltd.	Delhi.
Aminchand Payarelal	Jullunder City.
Khem Chand Raj Kumar	Jullunder City.
Hind Tank Manufacturing Co.	Bombay.
Mapara Parekh & Co.	Bombay.
Aminchand Bholanath	Jullunder City.
Hind Machines Ltd.	Howrah.
Agarwal Iron Works	Agra.
Atta's Iron Foundry	Howrah.
Ganpatray Ramnarain & Co.	Calcutta.

Tool Steel

Mukand Iron & Steel Works Ltd.	Bombay.
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T—Contd.**Toys**

Dukhinaswar Sarkar & Bros. ... Calcutta.

Transformers

Kaycee Industries Ltd. ... Bombay.
Electric Construction & Equipment Co., Ltd. Calcutta.

Tri-Cycle

Mapara Parekh & Co. ... Bombay.

Trucks & Trolleys

Jas. Alexander & Co., Ltd. ... Calcutta.
Hind Machines Ltd. ... Howrah.
Hind Tank Manufacturing Co. ... Bombay.
Tin Printing & Metal Works Ltd. ... Delhi.
Hindustan Motors Ltd. ... Calcutta.
New Standard Engineering Co., Ltd. ... Bombay.
Liluah Iron Works ... Howrah.

Trunks

Ram Saran Dass Aggarwal & Sons ... Jullunder City.
Aminchand Payarelal ... Jullunder City.
Goodman & Co. ... Calcutta.

Tubs

Ram Saran Dass Aggarwal & Sons ... Jullunder City.
Jas. Alexander & Co., Ltd. ... Calcutta.
Tin Printing & Metal Works Ltd. ... Delhi.
Aminchand Payarelal ... Jullunder City.
Khem Chand Raj Kumar ... Jullunder City.
Goodman & Co. ... Calcutta.
Shree Krishna Ltd. ... Calcutta.

Tubes

Firestone Tyre & Rubber Co. of India Ltd. ... Bombay.

Tube Wells

Atta's Iron Foundry ... Howrah.

T—*Contd.***Tubular Metal Furniture**

Godrej & Boyce Manufacturing Co., Ltd.	...	Bombay.
Harbanslal Malhotra & Sons Ltd.	...	Calcutta.
Kirloskar Bros. Ltd.	...	Satara.
Ajax Products Ltd.	...	Madras.
Atta's Iron Foundry	...	Howrah.

Tyres

Firestone Tyre & Rubber Co. of India Ltd.	...	Bombay.
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U**Umbrella Fittings**

Atta's Iron Foundry	...	Howrah.
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Universal Milling Machine

Hind Machines Ltd.	...	Howrah.
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Utensils (Household)

Kamani Engineering Corporation Ltd.	...	Bombay.
Khem Chand Raj Kumar	...	Jullunder City.
Saru Smelting & Refining Corporation Ltd.	...	Meerut.
Bengal Metal Works Ltd.	...	Calcutta.
Britannia Engineering Works & Foundry	...	Calcutta.
Indian Enamel Works Ltd.	...	Bombay.
Madras Enamel Works Ltd.	...	Madras.
Jeewanlal (1929) Ltd.	...	Calcutta.
Jamnadas Bros.	...	Calcutta.
Mysore Premier Metal Factory	...	Madras.
Hindustan Metal Refinery & Rolling Mills	...	Madras.
Tin Printing & Metal Works Ltd.	...	Delhi.
Lallubhai Aminchand	...	Bombay.

Utensils (Aluminium)

Aluminium Corporation of India Ltd.	...	Calcutta.
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**Utility & Presentation Articles
Aluminium (Anodised)**

Jeewanlal (1929) Ltd.	...	Calcutta.
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**Utility & Presentation Articles
(Fancy Articles)**

Aluminium Corporation of India Ltd.	...	Calcutta.
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V

Vacuum Vessels

Jyoti Ltd.	...	Baroda.
Liluah Iron Works	...	Howrah.

Vegetable-Ghee Plant

(See Industrial Plant & Machinery)

Vehicle Equipments

Victory Engineering Works	...	Calcutta.
Steel Equipment & Construction Ltd.	...	Calcutta.
D. K. Dass & Co., Ltd.	...	Howrah.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Hind Tank Manufacturing Co.	...	Bombay.

Vices

India Machinery Co., Ltd.	...	Calcutta.
Hind Machines Ltd.	...	Howrah.
Indian Tool Manufacturers Ltd.	...	Bombay.
Bharat Tool Manufacturing Co., Ltd.	...	Bombay.
Indian Malleable Castings Ltd.	...	Calcutta.
Peepul Iron & Steel Industries Ltd.	...	Kanpur.
Shivaji Works Ltd.	...	Tikekarwadi (Sholapur).

W

Washers

Goodman & Co.	...	Calcutta.
Shree Krishna Ltd.	...	Calcutta.

Water Heaters

Ramsarandass Aggarwal & Sons	...	Jullunder City.
Aminchand Payarelal	...	Jullunder City.

Water-Meter

Jay Engineering Works Ltd.	...	24 Parganas.
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Water Pipes

Indian Malleable Castings Ltd.	...	Calcutta.
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W—Contd.

Water Pipe Fittings

Kamani Engineering Corporation Ltd.	...	Bombay.
D. N. Singha & Co.	...	Howrah.
Peepl Iron & Steel Industries Ltd.	...	Kanpur.
Hind Tank Manufacturing Co.	...	Bombay.
Indian Hume Pipe Co., Ltd.	...	Bombay.
Aminchand Bholanath	...	Jullunder City.
National Metal Industries Ltd.	...	Calcutta.
Aminchand Payarelal	...	Jullunder City.

Weigh Bridges

Star Iron Works	...	Lillooah.
India Machinery Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.

Weighing Machines

Jas. Alexander & Co., Ltd.	...	Calcutta.
Star Iron Works	...	Lillooah.

Weights & Measures

Agarwal Iron Works	...	Agra.
Bindeswari Iron & Steel Corporation	...	Calcutta.
Agricultural Industries	...	Batala (Pb.)

Welding

Howrah Trading Co., Ltd.	...	Calcutta.
Jas. Alexander & Co., Ltd.	...	Calcutta.
Garlick & Co.	...	Bombay.
National Metal Industries Ltd.	...	Calcutta.
Burjorji Pestonji & Sons Ltd.	...	Bombay.

Wheels (Machine Cut)

Burjorji Pestonji & Sons Ltd.	...	Bombay.
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Winches

Liluah Iron Works	...	Howrah.
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Wire & Rods

(See Mild Steel Sections)

W—Contd.**Wires (Annealed : Soft Drawn : Bare Copper)**

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wires (Bell & Telephone)

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wires (Enamelled Copper)

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wires (Annealed : Tinned Copper Binding & Fuse)

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wires (Instrument : Cotton Braided & Cotton Covered)

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wires (Instrument : Silk Covered)

National Insulated Cable Co. of India Ltd. ...	Calcutta.
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Wire (Steel)

Indian Hume Pipe Co., Ltd.	...	Bombay.
Indian Steel & Wire Products Ltd.	...	Calcutta.
National Screw & Wire Products Ltd.	...	Calcutta.
Mukand Iron & Steel Works Ltd.	...	Bombay.

Woven Wire Fencing

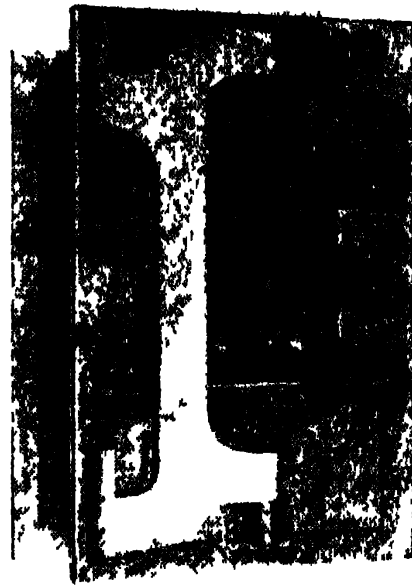
Agarwal Iron Works	...	Agra.
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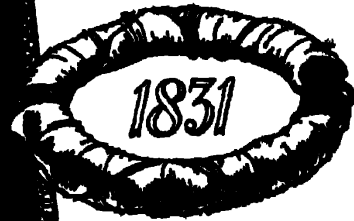
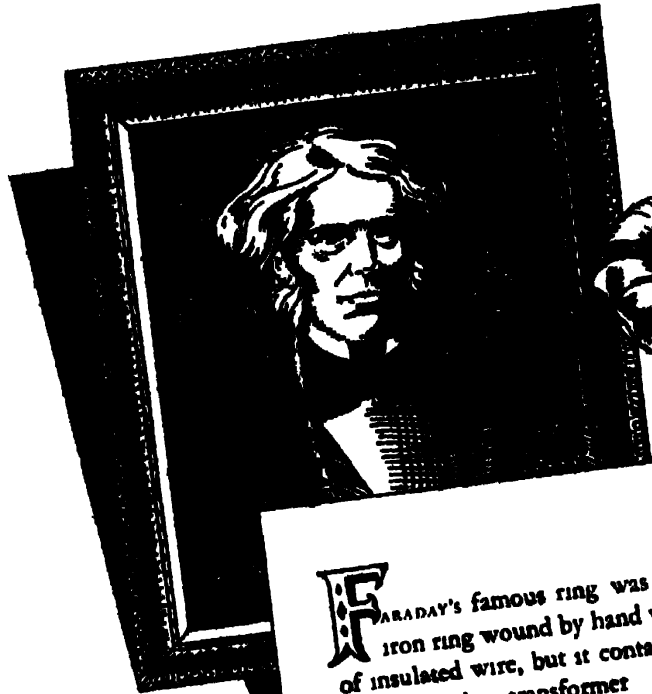
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IMPORT SECTION

TARIFF POLICY OF INDIA

In this Section we give detailed account of various Industries protected by Government of India at the present time. We give below the history of the tariff in India so that the reader may be enabled to grasp the present position of Indian tariffs and its effects on industrial development of the country.

Customs duties on articles imported by sea have been known in India for centuries though the rates have been low till 1920. The task of abolishing customs duties was taken up seriously by the East India Company in 1835 and was completed in 1844. In the meantime though the import duties on goods entering into India continued to be levied to some extent at different rates in different provinces, a fairly consistent tariff had been evolved. In 1859 the necessity of raising more revenue to meet the charges occasioned by the Mutiny led to revision and enhancement of the tariff. There were export duties also in existence. These were the integral features of the early tariff policy.

The tariff as reimposed in 1848 remained in its most essential features unaltered till the end of 1878. In general it consisted of low and uniform rate of duties imposed on nearly all imports. Its object was purely revenue but where levying of even a low rate of five percent was thought likely to impede the development of the country as in the case of railway materials, machinery and iron & steel, special exceptions were made. On the other hand liquors and tobacco were singled out as capable of bringing good revenue at comparatively high rates of taxation.

In 1916 the financial burden imposed by war necessitated enhancement of the tariff. In 1921, the Government were faced with an unprecedented deficit and further increase was effected in the tariff which was designed to produce an additional revenue but financial embarrassment of the Government of India and their need of more revenue from the customs were not even yet at an end and in 1922 it was found essential to make further far-reaching changes in the tariff.

A remarkable change in the Tariff Policy of the Government with a view to protecting the Indian Industries came up after the recommendations of the Indian Fiscal Commission which was appointed in October 1921, were published.

The Fiscal Commission recommended in the best interests of India the adoption of a policy of protection to be applied with discrimination.

The successful working of the scheme of protection as they contemplated, postulated the existence of a thoroughly competent and impartial organisation or a Tariff Board which would make enquiries into the condition of industries and recommend whether protection should or should not be extended to them and if extended what the rate of protection should be. They recommended that the Board must be one which will command the confidence of the country and must be above suspicion and any subservience to any particular interest. It was evident that the Board must be a permanent body. Consistent decisions and continuity of policy were considered to be of primary importance and these could not be secured except from a permanent Board. The functions of the Tariff Board were to make detailed enquiries into the claims for protection referred to it and to express its conclusions in the form of detailed and definite recommendations.

In dealing with all claims to protection the Fiscal Commission recommended that the Tariff Board should in the first instance satisfy itself that the following 3 conditions were fulfilled :—

- “(1) The industry must be one possessing natural advantages, such as an abundant supply of raw materials, cheap power, a sufficient supply of labour or a large home market. Such advantages will be of different relative importance in different industries, but they should all be weighed and their relative importance assessed. The successful industries of the world possess certain comparative advantages to which they owe their success. No industry which does not possess some comparative advantages will be able to compete with them on equal terms and therefore the natural advantages possessed by an

Indian industry should be analysed carefully, in order to ensure as far as possible that no industry is protected which will become a permanent burden on the community.

- (2) The industry must be one which without the help of protection either is not likely to develop at all or is not likely to develop so rapidly as is desirable in the interests of the country. This is an obvious corollary from the principles which have led us to recommend protection. The main object of protection is either to develop industries which otherwise would not be developed, or to develop them with greater rapidity.
- (3) The industry must be one which will eventually be able to face world competition without protection. In forming an estimate of the probabilities of this condition being fulfilled the natural advantages referred to in condition (1) will of course be considered carefully. The importance of this condition is obvious. The protection we contemplate is a temporary protection to be given to industries which will eventually be able to stand alone.

There are certain subsidiary conditions which, though not as in the case of the three conditions stated above, essential elements in an ordinary claim for protection, should nevertheless be regarded as factors favourable to the grant of protection. It is evident that an industry in which increasing output would mean increasing economy of production is, other things being equal, a particularly favourable subject for protection. Another class of industry which should be regarded with a favourable eye is that in which there is a probability that in course of time the whole needs of the country could be supplied by the home production. In the case of such an industry the burden on the consumer determines automatically. As soon as the foreign imports cease to come in, the price ceases to be regulated by the foreign price plus the import duty. It is regulated by the internal competition; and even though the duty may remain in the customs schedule, it becomes practically inoperative, and merely fixes a maximum limit to the height to which home

prices may rise - a limit which is never likely to come into effective operation unless the home producers form a monopolistic combine, or the home industry passes through a period of exceptional distress. It does not of course follow that, if an industry is never likely to supply more than a certain proportion of the country's requirements, it would not be a fit subject for protection. Provided that it fulfills condition (3) and is eventually able to face world competition without protection, it will be possible to take off the protective duty without injury to the industry, and the burden on the consumer will be removed. But we cannot shut our eyes to the fact that in protectionist countries considerable difficulty is experienced in reducing and removing duties, even when they are no longer required, and it is probable that such an industry will impose on the whole a greater burden on the consumer than its conditions really require."

The above scheme of protection continued to be applied to the various Indian industries which came in for investigation by the Tariff Board till 1939 when the war (1939) broke out. During the period of the war, a large number of industries came into existence to meet defence requirements of the country. Many of these industries were very important for the national economy of the country and their protection after the war when war orders would cease and imports from foreign countries would again begin to flow in, became the first care of the Government of India. During the war, the Government had announced on various occasions that the industries started or developed during the war would be protected in order that they might survive for making the country richer and more industrialised. This policy was announced in a more concrete form when the Government's Industrial Policy was made public in April, 1945 which we reproduce below for the information of our readers :—

"The formulation of a Tariff Policy appropriate to the post-war needs and conditions of the country is under active consideration. The subject, however, is one of great complexity, and will require a little further time for the Government of India to determine its policy and devise the machinery for implementing it. In the meantime the position of industries which have been established or developed in war time requires consideration. Some of these are covered by the

announcement made in 1940 in regard to grant of an assurance of post-war protection to essential war time industries. Out-side the scope of this announcement, however, lie a large number of industries which have helped to sustain the national economy during an exceptionally difficult period. The provision of assistance to or protection to such of these industries as have been established on sound lines is likely to assume a measure of urgency during the period of transition. Government propose to set up machinery without delay for the investigation of the claims of such industries for assistance or protection. This is a short term measure pending the formulation of long term tariff policy and the establishment of a permanent machinery for the purpose."

In terms of that announcement the Government of India announced the constitution of the Tariff Board for a period of 2 years on the 3rd November, 1945. Since the announcement of the Government would be of permanent interest to the industries, we are reproducing it below :—

"In the statement on industrial policy issued by the Government of India on the 23rd April, 1945, it was announced that, pending the formulation of a tariff policy appropriate to the post-war needs and conditions of the country and the establishment of permanent machinery for the purpose, Government would set up machinery for investigating claims from industries, which have been started or developed in war time and which are established on sound lines, to assistance or protection during the transition period. A press communique issued on the same date invited industries to address their claims to the Secretary to the Government of India in the Department of Commerce.

2. Several industries have accordingly applied for assistance or protection, and on a preliminary examination of their claims, the Government of India have come to the conclusion that applications submitted by the following industries call for a detailed examination :—

- (i) non-ferrous metals, including antimony ;
- (ii) grinding wheels ;
- (iii) caustic soda and bleaching powder ;

- (iv) sodium thiosulphate, sodium sulphite anhydrous, sodium bisulphite ;
- (v) phosphates and phosphoric acid ;
- (vi) butter colour, aerated water powder colour ;
- (vii) rubber manufactures ;
- (viii) fire hose ;
- (ix) wood screws ;
- (x) steel hoops for baling.

Other applications are under the consideration of Government, and further action in their case will be taken in due course.

3. In addition to the industries which have applied for assistance or protection, there are certain industries the starting of which was considered essential by the Government of India under conditions created by the war. Early in 1940, Government announced that specified industries promoted with their direct encouragement during war-time might feel assured that, they were conducted on sound business lines, they would, by such measures as Government might devise, be protected against unfair competition from outside India. In accordance with this decision, the following industries have been given an assurance of protection against unfair competition after the war :—

- (i) bichromates ;
- (ii) steel pipes & tubes upto a nominal bore of 4 inches ;
- (iii) aluminium ;
- (iv) calcium chloride ;
- (v) calcium carbide ;
- (vi) starch.

Of these Industries, only those engaged in the manufacture of bichromates, calcium chloride and starch have so far applied for assistance or protection during the transition period. The Government of India consider that the applications submitted by these three industries also call for immediate investigation.

4. For the purpose of these and any subsequent investigation, the Government of India have decided to set up a Tariff Board for a period not exceeding two years, in the first instance. The Board will consist of :—

President

Sir R. K. Shanmukham Chetty, K.C.I.E.

Members

Mr. C. C. Desai, C.I.E., I.C.S.,

Prof. H. L. Dey, D. Sc. (London).

The Board will include one more Member whose name will be announced shortly. Mr. Desai will act as Secretary to the Board in addition to his duties as Member.

5. The Tariff Board is requested to undertake, in such order as it thinks fit, the investigation of claims put forward by the industries specified in paragraphs 2 and 3 above. In the case of each industry the Board will, after such examination as it considers necessary, report whether the industry satisfies the following conditions :—

- (1) That it is established and conducted on sound business lines ; and
- (2) (a) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance ; or
(b) that it is an industry to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive. Where a claim to protection or assistance is found to be established, *i.e.*, if condition (1) and condition (2) (a) or (b) are satisfied, the Board will recommend —
 - (i) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed ;

- (ii) what additional or alternative measure should be taken to protect or assist the industry ; and
- (iii) for what period, not exceeding three years, the tariff or other measures recommended should remain in force.

In making its recommendations, the Board will give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted. Since relief, to be effective, should be afforded without delay, the Board is requested to complete its enquiries with all possible expedition and to submit a report as soon as the investigation of the claim of each industry is concluded.

6. The headquarters of the Board will be at Bombay, but it will visit such other places as it thinks necessary for purposes of its enquiries. Firms and persons interested in any of these industries, or in industries dependent on the use of the products of these industries, who desire that their views should be considered, should address their representations to the Secretary to the Board.

7. Any claim hereafter received from other industries which in the opinion of the Government of India are suitable for examination by the Board will be referred to the Board in due course for examination.

8. The Government of India trust that Provincial Governments and Administrations will afford the Board all the assistance which it may require and will comply with any request for information which may be addressed to them by it."

From the above announcement it would appear that the main function of the Tariff Board was to undertake the investigation of claims put forward by the industries.

After the assumption of power by the nationals of the country and the partition of the country certain changes were made in the personnel of the Board. Of the old members Sir R. K. Shanmukhan Chetty became the Finance Minister, Dr. Nazir Ahmad went over to Pakistan and Mr. C. C. Desai became the

Secretary to the Government of India in the Ministry of Commerce. Thus the Board was left only with Dr. H. L. Dey from the old set-up. The Board was reconstituted in November, 1947, and at present consists of :—

1. Mr. G. L. Mehta—*President*,
2. Dr. Narainswamy Naidu—*Member* and
3. Dr. H. L. Dey—*Member*.

The Government of India's resolution on Industrial Policy issued on the 6th April, 1948, put the Tariff Policy of the Government in the following terms :—

“The Tariff Policy of Government will be designed to prevent unfair competition and to promote the utilisation of India's resources without imposing unjustifiable burden on the consumer.”

The Government of India assigned two additional functions to the reconstituted Board, namely :—

- (1) To report to the Government as and when required, factors that lead to increase in the cost of production of Indian manufactured goods as against imported articles.
- (2) To advise the Government, as and when required, on measures whereby internal production may be secured on the most economical cost basis.

Subsequently, by a resolution dated the 6th August, 1948, the Government entrusted the Board with the following new functions :—

- (3) To enquire, as and when required by the Government, into the cost of production of a commodity produced in the country and to determine its wholesale, retail or other prices, and to report on the same.
- (4) To recommend to the Government, as and when required, measures necessary for the protection of India's industries from dumping from abroad.

- (5) To undertake studies, as and when necessary on the effects of *ad valorem* and specific duties and tariff valuations on various articles and the effects on tariff concessions granted to other countries.
- (6) To report to the Government, as and when necessary, on combinations, trusts, monopolies and other restraints on trade, which may tend to affect the industries enjoying protection by restricting production, or maintaining or raising prices and to suggest ways and means of preventing such practices.
- (7) To maintain a continuous watch over the progress of protected industries by conducting enquiries, as and when necessary, on the effect of the protective duties or other means of assistance granted, and advise the Government regarding the necessity or otherwise of modifying the protection or assistance granted ; to keep a careful watch to ensure that conditions attached to the grant of protection were fully implemented and that the protected industries were being run efficiently.

It will be seen that, for the first time since the Indian Fiscal Commission made its recommendations nearly 26 years ago, the Tariff Board in India has been entrusted with certain new functions in addition to its normal function of investigating into claims for protection or assistance and of tariff equalisation. It can be said that the Board now occupies a position equal in many respects to its counterparts in Australia, Canada and the U.S.A.

In India, at the present time, as industrial development proceeds, new tariff problems arise, and new methods of trade control have to be devised and adopted. It is, therefore, necessary for an autonomous and expert agency of the Government to follow changes in tariffs and foreign trade arrangements and their bearing upon national industry and commerce. As in the case of other countries, the Tariff Board in India has had to build up its own technique and methods of procedure in the investigations so far conducted by it; and it can be said to have gained the confidence of the interests concerned. It would not be too much to hope that, in the years to come, the Board will establish its

"integral and, almost indispensable, role as investigator and adviser to Government on the whole gamut of tariff problems, from a matter of the specific rate on a given commodity to questions of general tariff and industrial policy of the country."

1. Alloy Tool and Special Steels Industry :—In their resolution in the late Department of Commerce No. 218-T(55)/45, dated the 12th October, 1946, the Government of India referred to the Tariff Board a claim to protection received from the Alloy, Tool and Special Steels Industry.

The Board, having considered this claim, submitted its report to Government. The Board considered that the Alloy, Tool and Special Steels Industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

(i) "A protective duty of 30 per cent *ad valorem* should be imposed on imported special steels of British manufacture which should remain in force up to the 31st March, 1949. The corresponding duty on non-British steel should, if necessary, be adjusted according to the terms of the Indo-British Trade Agreement, 1939."

(ii) "The estimated fair selling price is Rs. 718.53 per ton of 3½ per cent nickel steel, Rs. 4.51 per lb. of 18 per cent tungsten high speed steel and Rs. 5.33 per lb. of 5 per cent cobalt steel. The fair selling price for stainless steel suggested by the Tariff Board is Rs. 1.53 per lb. These prices should remain valid up to the 31st March, 1949, and the matter should be re-examined towards the end of 1948."

(iii) "For the period ending 31st March, 1949, import control should continue and the policy of orderly disposal of Government stocks and import control and fixation of ceiling prices as recommended by the Board should be adopted."

(iv) "An assurance of protection should be given to the industry for the period ending 31st March, 1950."

(d) "Tariff item No. 63(30) should be re-classified as follows :—

Item No.	Name of articles	Nature of duty	Standard rate	Duration of the duty
63 (30)	Alloy, tool or special steel rods or bars of the following categories, but excluding precision ground and polished bars, bright drawn bars, blue reeled bars and silver steel finish bars :— (i) High speed steel-steel containing more than 13% tungsten. (ii) Stainless and heat resisting steels-steels containing more than 11% chromium (iii) Other alloy steels containing any of the following and not included in categories (i) or (ii):— 0.40% or more of chromium or nickel ; 0.10% or more of molybdenum, tungsten or vanadium ; or 10.00% or more of manganese.	Protective	30% ad valorem	March 31st 1949.

N.B.—The duty is applicable to special steels of British manufacture. The corresponding duty on non-British steels should, if necessary, be adjusted according to the terms of the Indo-British Trade Agreement.

(vi) "The duty on all future imports of machinery required by the industry should be refunded."

(vii) "Manufacturers of these special steels should maintain separate and detailed cost data."

Government's Conclusions:—

The Government of India have carefully considered the report and as per their resolution in the Extra Ordinary Gazette dated 13th March, 1948 have decided to accept the principal recommendations contained in paragraph 2(i) and (ii) above. Steps are being taken to levy the protective duties recommended by the Board.

2. Aluminium Industry:—The Board considered that aluminium industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations:—

- (1) The Board draws the attention of Government to the question of railway freights and port dues charged on raw materials and semi-manufactured goods and recommends examination by the appropriate authority with a view to eliminating factors which may retard the attainment of low costs of production of aluminium ingot and expansion of production of aluminium in the country.
- (2) Government should take active steps to ensure that the reduction works at Alwaye get the power necessary for attainment of full production as early as possible.
- (3) Steps should be taken to encourage expansion of production so as to meet the home demand.
- (4) Specifications should be prescribed to ensure the purity of the metal used in utensil making, this being essential in view of the large quantity of utensils consumed in the country.
- (5) Government should help the rolling mills to procure modern up-to-date equipment from abroad as soon as possible.

- (6) The problem of protecting the industry has to be met by a system of protective duty on imports on the one hand and subsidy to the home producer on the other.
- (7) The scheme of protective duty-cum-subsidy should be based on the selling price to the consumer of Rs. 1,600 per ton of ingot for the period ending March, 1949. This price should be fixed as the maximum selling price. The maximum selling price for sheets and circles should be fixed at Rs. 2,450 per ton equal to the present lowest landed cost.
- (8) A specific duty of Rs. 590 per ton should be levied on imports of aluminium ingot into the country for the period ending 31st March, 1949. If the landed cost ex-duty on imported ingot falls below Rs. 980 per ton action should be taken under section 4(1) of the Indian Tariff Act 1934 to raise the duty so as to maintain the measure of protection recommended by us. There should be no modification in the selling price recommended during the period of protection.
- (9) A specific duty of Rs. 590 per ton should be levied on aluminium sheets and circles for the period ending March 31, 1949. Should the landed cost ex-duty fall below Rs. 1,880 per ton, the amount of duty should be raised so as to bring up the total landed cost including duty to Rs. 2,450 per ton and thereby to maintain the measure of protection recommended by the Board.
- (10) A subsidy should be paid to the Aluminium Corporation of India and, if so decided by Government to Indian Aluminium Company, equal to the difference between their fair selling price or cost of production including profit and the selling prices recommended by us. On this basis the Company should be paid a subsidy of Rs. 817 per ton during the six months October-March 1946-47, Rs. 586 per ton in 1947-48 and Rs. 300 per ton in 1948-49. The Corporation should be paid a subsidy of Rs. 848, Rs. 576 and Rs. 268 per ton respectively during the three periods. The subsidy should be paid on the actual production.

- (11) If the production assumed in the case of the Indian Aluminium Company exceeded, the cost of production and fair selling price would correspondingly fall and the amount of subsidy payable should also be reduced. A review should be undertaken for this purpose some time in 1948.
- (12) The cost of the subsidy can be met from the additional revenue expected as a result of the higher duties recommended, and a substantial part of the balance of such additional revenue, *i.e.* excluding the equivalent of the existing revenue duty proceeds, should not be carried to the general revenues of the State, but should constitute an Aluminium Development Fund to be utilised for the development of the Aluminium Industry.
- (13) Aluminium products should be placed on the list of open general licence with effect from the date on which the scheme of protection comes into force.
- (14) The pool arrangement should be terminated when the scheme of protection comes into force and the balance in the pool merged into the Aluminium Development Fund, recommended by us.
- (15) The prices fixed for utensils under the Aluminium Utensils Control Order should be revised when the issue price of ingot is reduced from the present level of Rs. 2,100 per ton to Rs. 1,600 per ton.
- (16) Aluminium foil should be treated as an aluminium product, subject to the protective duty of Rs. 590 per ton as in the case of ingots, sheets and circles and other products.
- (17) The Aluminium Industries Limited, of Trivandrum should be given a rebate on duty in excess of 30 per cent on the basis of the quantity of aluminium cables produced and marketed by them. The concession of rebate of duty in excess of 30 per cent *ad valorem* should be extended to any other producers of aluminium cables who may come into

existence during the protection period. The rebate under this recommendation may be a charge on the Aluminium Development Fund, if our recommendation in regard to it is accepted.

- (18) We recommend to the aluminium interests to form a strong organisation comprising the whole industry and representing it *vis-a-vis* Government and organisations of the Industry in other countries.

Government's Conclusions:—

The Government have come to the conclusion that aluminium is a key industry which should be developed in India. They feel, however, that the Tariff Board's report raises various issues of great importance and that a further technical examination of these issues is necessary

They have, therefore, decided to appoint an official committee to carry out a further investigation of a technical nature, and will defer passing order on the Tariff Board's report until the further investigation has been carried out.

Pending completion of the Committee's enquiry the existing pool arrangement for aluminium, by which imports and local production are pooled together and a common price fixed, modified to suit changed conditions, will be continued. The Industries and Supplies Department will extend the arrangement to cover aluminium sheets and circles as well and will continue to operate the pool in such form and manner as may be warranted from time to time.

3. Antimony Industry:—The Government of India, Department of Commerce, in their Resolution No. 218-T(55)/45 dated the 3rd November, 1945, referred to the Tariff Board for investigation a claim to protection received from the Antimony Industry.

The Board, having considered this claim, submitted its report to the Government.

The Board's recommendations regarding the antimony industry were originally based on the assumption that the industry would depend exclusively on the indigenous ore, and were

later modified when it was found that imported ore was being used. The Board considered that the industry was established on sound business lines and enjoyed natural advantages. It recommended the grant of protection to the industry, its main revised recommendations being as follows :—

Tariff Board's Recommendations :—

- (i) A protective duty of Rs. 60 per cent should be levied up to the end of March, 1949.
- (ii) The specific duty should be modified under section 4(i) of the Indian Tariff Act of 1934 in the light of any variation in the *c.i.f.* price of Star antimony imported from anywhere above Rs. 90 or below Rs. 80 per cwt.
- (iii) There should be separate heads in the Tariff Schedule for antimony and antimony crude. The specific duty on antimony crude should be 70 per cent of the duty levied on antimony metal.
- (iv) Government should pay a subsidy to the Refinery in respect of actual sales equal to the difference between the sale price of Rs. 150 per cwt. and the actual cost of production in 1947 but not exceeding Rs. 13 per cwt. The payment of subsidy should be similarly determined at the end of 1948 in the light of actual cost of production in 1948.
- (v) In consideration of the grant of subsidy the Refinery should give an undertaking that all antimony would be sold at a maximum price of Rs. 150 per cwt.
- (vi) The Central Government in the Department of Industries and Supplies should give every assistance to the Mining Company to secure a generating plant for working the floatation plant at the minehead.
- (vii) The Central Government in the Department of Labour should examine the feasibility of constructing a road 40 miles in length over the Dir Pass between Peshawar

and Chitral construction being justified if the road will also serve other purposes than reducing the cost of antimony ore mined at Chitral.

(viii) A review should be undertaken in the course of the year 1947 and the question whether the company should be asked to constitute itself into a public limited concern should be examined.

(ix) Government requirements of antimony should be met from the indigenous production, even if the price of imported material is lower than that of Indian production.

Government's Conclusions:—

The Government of India, while unable to agree that the industry can be described as having natural advantages, in view of the fact that the ore is mined in a remote and inaccessible region and transport from the minehead in Chitral to the rail-head at Durgai forms the main item in the cost of production, accept the view that the industry is deserving of protection as a key industry. Since antimony is an essential material for the munitions production, as well as for such important industrial requirements as type metals and anti-friction bearing metals, the national importance of the industry is sufficient to outweigh the natural disadvantages from which it labours.

Government find that since the time of the Tariff Board's report the position has changed in several material particulars. Apart from the fact, which caused the Board to revise its recommendations, that the industry has been using some quantity of imported ore, the cost of production at the Star Metal Refinery has fallen to Rs. 195 per cwt., while the landed cost, including duty, of imported antimony is reported to have risen to Rs. 162-8-0 per cwt. In view of these developments, Government consider that it would clearly be unnecessary to subsidise the industry and it would be sufficient to grant protection by means of a protective *ad valorem* duty.

Government also note that no reliable estimate of the volume of ore deposits in Chitral was available to the Tariff Board. If the ore resources should prove to be limited, it would be unwise

to exploit them at the present time and the more prudent course would be to keep them as a strategic reserve for utilization at a time of emergency. Government accordingly propose to arrange for an investigation into the extent of the ore deposits.

Meanwhile, Government have decided to convert the existing revenue duty on antimony of 30 per cent *ad valorem* into a protective *ad valorem* duty at the same rate. This will serve as an assurance to the industry that it is considered deserving of protection and will enable Government to accord a further degree of protection, by executive action, if and when considered desirable. The present high landed cost of imported antimony, will also in the opinion of Government provide sufficient protection for the industry for the present.

Government accept recommendation (iii), except that the protective duty on crude antimony will be an *ad valorem* duty of 20 per cent (approximately 70 per cent of the duty on antimony). Recommendations (vi), (vii) and (ix) are accepted and steps will be taken to give effect to them. If, however, the ore deposits should prove to be limited it will be necessary to reconsider recommendation (ix). Recommendation (vii) will be further examined in the appropriate department of Government.

The necessary legislation to give effect to these decisions will be undertaken as soon as possible.

4. Bicycle Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 4th May, 1946, the Government of India referred to the Tariff Board a claim for protection received from the bicycles industry.

2. The Board having considered this claim, submitted its report to Government. The Board considered that the bicycles industry qualified for grant of protection in the transition period, and made the following recommendations :—

Tariff Board's Recommendations :—

- (i) The existing *ad valorem* duty of 24 per cent should be converted into a protective duty at the same rate to remain in force till the 31st March, 1949. If the total landed cost of an imported bicycle inclusive of duty

goes below Rs. 109 during the period ending 31st March, 1948 and goes below Rs. 100 during the period from the 1st April, 1948, to 31st March, 1949, action should be taken under Section 4(1) of the Indian Tariff Act of 1934 to raise the duty so as to make the landed cost inclusive of duty of a bicycle Rs. 109 during the first period and Rs. 100 during the second period. The cycle referred to is the standard gents' bicycle with 24 inches frame without any accessories;

- (ii) In the Tariff Schedule cycles and spare parts should be shown separately under the categories (a) cycles (other than motor cycles) imported entire or in sections, (b) cycle frames, (c) handlebars for cycles, and (d) all other parts and accessories of cycles not otherwise specified (excluding rubber tyres and tubes);
- (iii) The Steel Controller should give special facilities for the manufacture and supply by the Indian steel manufacturers of the steel required by the cycle industry;
- (iv) It should be made a condition of the grant of protection that the cycle industry should actually spend or set apart specified amounts for research;
- (v) The import duty on machinery imported for the manufacture of cycles should be refunded;
- (vi) Bicycles required by the departments of Government, both civil and military, should be purchased from indigenous manufacturers.

Government's Conclusions :—

3. The Government of India accept recommendation (i) and have decided to replace the existing standard rate of 36 per cent. *ad valorem* and preferential rates of 24 per cent. on manufactures of the U. K. and 12 per cent. on manufactures of Burma by protective *ad valorem* duties of 36 per cent., 24 per cent. and 12 per cent. respectively. These protective duties will remain in

force till the 31st March, 1949. Appropriate action under section 4(1) of the Indian Tariff Act, 1934 will be taken if the C. I. F. prices of imported bicycles fell below the levels indicated in paragraph 2(i) of this Resolution.

4. Government accept recommendations (ii) and (iii) and necessary action is being taken to implement them.

5. The Government of India attach great importance to recommendation (iv) and expect that each of the Indian manufacturers will spend or set apart for research in a separate fund a sum of not less than Rs. 50,000 in the year 1947 and Rs. 70,000 in the year 1948. Government reserve the right to withdraw the protective duties agreed to in paragraph 3 above if the industry fails to set aside the amounts specified for research.

6. Recommendation (v) will be considered along with the general proposal for remission of import duty on machinery which is under the consideration of Government. With regard to recommendation (vi) Government consider that this is sufficiently covered by the orders already in force in regard to purchase of bicycles by Government Departments.

5. Coated Abrasives Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 16th February, 1946, the Government of India referred to the Tariff Board a claim to protection received from the Coated Abrasives Industry.

2. The Board considered that the coated abrasives industry qualified for the grant of protection in the transition period, and made the following recommendations :—

Tariff Board's Recommendations :—

- (1) The present revenue duties on abrasive papers (item 30 of the Indian Customs Tariff Schedule), the standard rate being 36 per cent. *ad valorem*, the preferential rate on imports from U. K. 24 per cent. *ad valorem* and the preferential rate on imports from Burma 12 per cent *ad valorem*, should be converted into protective *ad valorem* duties and be maintained for the

period ending 31st March, 1949. This article should be listed as a separate item in the Customs Tariff Schedule.

- (2) The present revenue duty on emery cloth (item 87 of the Indian Customs Tariff Schedule) which is 30 per cent. *ad valorem* should be replaced by a protective duty of 40 per cent. *ad valorem* and this should remain in force for the period ending 31st March, 1949. This article should also be listed under a separate number in the Customs Tariff Schedule.
- (3) All abrasives, coils, discs, belts, shapes, tapes, etc. made of paper, when they are imported as stores apart from machinery, should be subject to the same protective duties as abrasive papers.
- (4) All abrasive rolls, coils, discs, belts, shapes, tapes, etc. made of cloth, or combination of paper and cloth, when they are imported as stores apart from machinery, should be subject to the same duties as abrasive cloth.
- (5) No import licence for coated abrasives should be issued for the second half of 1946 and thereafter they should be placed on the Open General Licence list.
- (6) The present revenue duty of 30 per cent. *ad valorem* on synthetic grains should be refunded in the case of firms producing coated abrasive paper and cloth of all grades, shapes and sizes.
- (7) The present revenue duty of 30 per cent. *ad valorem* on emery and kraft paper should be refunded in the case of firms producing coated abrasive paper and cloth of all grades, shapes and sizes. If evidence is forthcoming that the Indian paper manufacturers are manufacturing kraft paper, Government should suspend the grant of rebate until the case of the paper industry is examined. The question of developing the Indian corundum industry should be taken up for examination at an early date by Government.

- (8) Arrangements should be made by the Textile Commissioner to release reasonable quantities of backing cloth of the requisite specifications for the manufacturers of coated abrasive cloth.
- (9) All facilities should be given for the exportation of coated abrasives from India.
- (10) The Engineering Association of India should be moved to take steps to prescribe suitable standard specification for indigenous coated abrasives.

Government's Conclusions:—

3. The Government of India have, after careful consideration decided to accept all the recommendations of the Board except Nos. (2), (4), (6) and (7). In regard to abrasive papers the existing standard rate of 36%, *ad valorem* the preferential rates of 24% on manufactures of the U. K. or of a British colony and 12% on imports from Burma will be replaced by protective *ad valorem* duties of 36%, 24% and 12%, respectively. These protective duties will remain in force till the 31st March, 1949. Similar protective duties will be also levied on all abrasive rolls, coils, discs, belts, shapes, tapes, etc., made of paper when they are imported as stores apart from machinery.

4. In view of the figures quoted by the Tariff Board relating to indigenous costs of production of emery cloth, and having regard to paragraph 28 of the Board's report, Government have come to the conclusion that the existing revenue duty of 30% *ad valorem* on emery cloth affords adequate protection to Indian manufacturers and have, therefore, decided to convert this duty into a 30% protective duty. This new duty will remain in force up to 31st March, 1949. As regards recommendation (4), which follows from recommendation (2) all abrasive rolls, coils, etc., made of cloth or a combination of paper and cloth will also be subject to a protective duty of 30%.

5. Steps have already been taken to give effect to recommendation (5).

6. With regard to recommendations (6) and (7) Government consider that since the protective duties proposed above would

give sufficient protection to the industry the grant of a further measure of relief by way of a refund of the 30% revenue duty on synthetic grains and emery and kraft paper is unjustifiable.

7. As regards recommendations (8) and (9), the Government of India would be prepared, so far as possible, to grant the requisite facilities whenever they are approached by the manufacturers.

8. The Government of India in the Department of Industries and Supplies will take steps to prescribe suitable standard specifications for indigenous coated abrasives.

6. Cotton and Hair Belting Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 12th October, 1946, the Government of India referred to the Tariff Board a claim for protection from the Cotton and Hair Belting Industry.

The Board, having considered this claim has submitted its report to Government. This Board considered that the cotton and hair belting industry qualified for the grant of protection in the transition period and made the following recommendations: --

Tariff Board's Recommendations :—

(1) "The existing revenue duty of $7\frac{1}{2}$ per cent *ad valorem* should be converted into a protective duty at the same rate, which should remain in force up to 31st March, 1950.

(2) The account of India's Sea-borne Trade does not record the figures of imports of beltings by quantity or tonnage. It only gives figures of values. The figures of tonnage of imports of belting as well as their values should be recorded in the Sea-borne Trade Account.

(3) So far as industrial beltings are concerned, the quality of the indigenous belting is, generally speaking, as good as that of the imported product. As regards train lighting beltings manufactured in the country, although they have not been found to be quite satisfactory by the Railways, they are capable of improvement so as to make them suitable for train lighting pur-

poses. These beltings should be given by the Railway Board a fair trial under normal conditions, and if they are found serviceable, necessary changes should be made in the Indian Railway Standard Specification so as to make these beltings acceptable to the Railways.

(4) The manufacturers should take early steps to set up proper marketing and servicing organisations.

(5) The Textile Commissioner should assess the industry's requirements of yarn and meet them as far as possible."

Government's Conclusions :—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 12th April 1948 have decided to accept recommendations (1), (3) and (5) and steps are being taken to implement them.

Recommendation (2) is under the consideration of Government along with the general question of reclassification of India's Sea-borne Trade Accounts.

The Government of India wish to draw the attention of the industry to recommendation (4) contained in paragraph 2 of this Resolution and expect the industry to take necessary steps to give effect to it.

7. Cotton Textile Machinery :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated 13th July, 1946 the Government of India referred to the Tariff Board a claim to protection received from the Cotton Textile Machinery Industry.

The Board having considered this claim submitted an interim report to Government with the following recommendations :

Tariff Board's Recommendations :—

(1) It is not possible to make reasonable estimate of costs bases on the very small volume of production so far achieved in the country. The application for protection is, therefore, premature and the enquiry should be postponed and taken up again early in 1948.

(2) It is recommended that in the accounts relating to the Sea-Borne Trade and Navigation of British India, Spinning and Weaving machinery should be sub-divided as follows :—

Spinning Machinery : (a) Blow Room Machinery, (b) Cards, (c) Speed Frames (including drawing), (d) Spinning Frames, (e) Doubling Frames.

Weaving Machinery : (a) Winding Machines, (b) Working Machines, (c) Looms.

Government's Conclusions :—

As regards recommendation (1) the Government of India have decided as per Resolution dated 9th August 1947 to authorise the Tariff Board to have a fresh enquiry in the year 1948 into the Textile Machinery Industry when it has attained sufficient volume of production which would enable the Board to estimate costs of production.

Government have accepted the recommendation (2) and necessary steps will be taken to give effect to it.

8. Dry Battery Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 12th October, 1946, the Government of India referred to the Tariff Board a claim for protection from the dry battery industry.

The Board, having considered this claim, submitted its report to Government. The Board considered that the dry battery industry qualified for the grant of protection and made the following commendations :—

Tariff Board's Recommendations :—

(1) "The industry should be protected for the period ending March, 1950. The existing 30 per cent. *ad valorem* revenue duty should be converted to an equivalent *ad valorem* protective duty valid up to end of March, 1949. The cost of the Estrela Batteries Ltd., Bombay, should be reviewed early in 1949 to determine what the rate of duty should be for the remainder of the period of protection i.e., for 1949-50.

(2) In the event of the c.i.f. price falling below Rs. 173 per 1,000 standard cells, the duty should be reviewed under Section

4(1) of the Indian Tariff Act so as to raise the total landed cost to Rs. 230 in order to maintain the recommended measure of protection.

(3) "The existing import duty of 10 per cent. on battery manufacturing machinery paid in respect of future imports should be refunded.

(4) The dry battery producers should form an Association with a view to joint encouragement of research in this industry. There should be better liaison between the industry and the Council of Scientific and Industrial Research.

(5) Government should examine the industry's request that National Carbon should be asked to print "Made in India" on the labels of their Calcutta factory products sold in India so that consumers may know that the National Carbons products are also indigenous and not foreign-made.

(6) All import control over this commodity should be lifted, unless its retention is considered necessary for other reasons, such as conservation of foreign exchange."

Government's Conclusions:—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 12th April, 1948 have decided to accept the Board's recommendations (1), (2), (5) and (6) and steps are being taken to implement the same.

The Government of India have drawn the attention of the industry to recommendation (4) of the Board contained in paragraph 2 of this Resolution and have expected the industry to take necessary steps to implement it.

* Recommendation (3) is under the consideration of Government.

9. Electric Motors:—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 13th July, 1946, the Government of India referred to the Tariff Board a claim to protection received from the Electric Motors Industry.

The Board, having considered this claim, submitted its report to Government. The Board considered that the Electric motors industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

"(1) The present revenue duty of 10 per cent *ad valorem* on electric motors should be converted into an equivalent protective duty which should remain in force till the end of March, 1950.

(2) Electric motors are not shown separately in the Sea-Borne Trade Statistics or in the Indian Customs Tariff. In order to watch imports with particular reference to the type of motors made in India, a separate item in the Customs Schedule should be shown as under :—

- (i) Squirrel cage induction motors 1 to 30 h. p.
- (ii) Slip ring motors 15 to 50 h. p.
- (iii) Fractional h. p. motors; and
- (iv) All other electric motors not covered by the above.

(3) The present import restrictions should be withdrawn, as healthy competition from abroad is desirable to maintain and improve the quality of the Indian product.

(4) Customs duty paid on electric motors manufacturing machinery imported in future should be refunded."

Government's Conclusions :—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 12th April, 1948 have decided to accept recommendations (1) and (3) and steps are being taken to implement them.

Government have accepted in principle the recommendation relating to the creation of a separate item in the Tariff Schedule and steps are accordingly being taken to give effect to it as early as possible. The question of showing 'electric motors' separately in the Sea-borne Trade Statistics will be taken up along with the general question of re-classification of India's Sea-borne Trade Accounts which is currently under examination.

Recommendation (4) contained in paragraph 2 of this Resolution is under the consideration of Government along with the general question relating to remission of customs duty on imported industrial machinery.

10. Ferro-Silicon Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 12th October, 1946, the Government of India referred to the Tariff Board a claim to protection received from the ferro-silicon industry.

The Board, having considered this claim submitted its report to Government. The Board considered that the ferro-silicon industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

"(1) The present revenue duty of 18 $\frac{3}{4}$ th per cent *ad valorem* should be converted into a protective duty at the same rate for the period ending 31st March, 1950.

(2) The present system of import control under which an intending importer can get an import licence for only one ton of ferro-silicon, provided he simultaneously places orders for 2 tons of ferro-silicon with the Mysore Factory, should continue till the 31st March, 1949.

(3) Ceiling prices should be fixed for the three grades of ferro-silicon manufactured in India on the basis of the Board's estimate of fair selling prices, which should remain valid for the whole period of import control *i.e.*, upto the 31st March, 1949. The three grades are 70/75 per cent., 45/50 per cent. and 20/25 per cent.

(4) A separate heading should be opened for ferro-silicon in the Indian Customs Tariff and in the Annual Seaborne Trade Accounts. The word ferro-silicon should consequently be omitted from item 63(1).

(5) The duty on all future imports of machinery required for the ferro-silicon industry should be refunded.

(6) The claim made by the steel manufacturers of Lahore region for exemption from import control in respect of ferro-silicon on the ground that it is cheaper to import *via* Karachi than to have ferro-silicon transported by rail from Mysore may be granted."

Government's Conclusions:—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 10th May, 1948 have carefully considered the report and have decided to accept the principal recommendation contained in paragraph 2(1) above. With regard to recommendation (2) Government are of the view that so long as import control on ferro-silicon is maintained for reasons of foreign exchange, the present system of linking up the off-take of the indigenous product with the import licence should be continued as it proves to be a convenient way of securing incidentally the consumption of the indigenous product, while achieving the main purpose of conserving exchange.

The Government of India have accepted recommendation (3) and steps will be taken in due course to implement it.

Recommendations (4) and (5) contained in paragraph 2 of this Resolution are under consideration.

No action is called for on recommendation (6) as the Lahore region is no longer in the Indian territory.

11. Fire Hose Industry:—In their Resolution in the Department of Commerce No. 218-T(55)/45, dated the 3rd November, 1945, the Government of India constituted a Tariff Board and referred to it a claim for protection from the fire hose industry. The terms of reference to the Tariff Board are contained in paragraph 5 of the Resolution.

The Board considered that this industry did not qualify for the grant of protection, and made the following recommendations :—

"(1) No protection or assistance is recommended for the industry because its quality has not proved acceptable to important classes of consumers, *viz.*, fire brigades and fire insurance associations.

- (2) The available evidence regarding the quality of the indigenous fire hose is not conclusive and it is desirable that the matter should be further examined from the technical point of view.
- (3) Adequate samples of fire hose should be submitted by the manufacturers to the principal fire brigades for necessary performance tests. If their reports are satisfactory, the manufacturers of fire hose may commence production once again and if they find that they cannot compete with imported fire hose, they may approach Government again for instituting an enquiry into their claim for protection."

Government's Conclusions :—

The Government of India accept the recommendations of the Board, and have decided to reject the claim to protection made by the fire hose industry. Government wish to draw the attention of the industry to recommendations (2) and (3) of the Board contained in paragraph 2 of this Resolution and expect the industry to take necessary steps to implement them.

12. Grinding Wheels Industry :—In their Resolution in the Department of Commerce, No. 218-T(55)/45 dated the 3rd November, 1945, the Government of India referred to the Tariff Board a claim to protection received from the Grinding Wheels Industry.

The Board having considered this claim, submitted its report to Government. The Board considered that the grinding wheels industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

(1) No new licences for the import of grinding wheels and segments, oil stones, sharpening stones, etc., should be issued for the remainder of 1946.

(2) A protective import duty of 80 per cent. should be levied on all articles covered by the category "grinding wheels

and segments" for a period of three years with immediate effect, and a separate heading should be created for the same in the customs tariff schedule.

(3) If the c. i. f. prices of grinding wheels fall below the estimated current c. i. f. prices by 10 per cent. or more, action should be taken under section 4 of the Indian Tariff Act of 1934 and the duty should be so adjusted as to maintain the measure of protection recommended by us.

(4) The existing concession in favour of "Grindwells" to import synthetic abrasive grains free of customs duty should be continued for the entire period of protection and be extended to other manufacturers of grinding wheels in the country.

(5) All Railway and Government orders for grinding wheels should be placed with the Indian manufacturers up to the limit of their productive capacity.

Government's Conclusions :—

The Government of India feel that, in view of the figures quoted by the Board in paragraph 37 of its report, the industry is not likely to survive even with as high an import duty as 80 per cent. Large stocks of grinding wheels are also reported to be accumulating in certain foreign countries, the surplus of which might easily be exported to India at prices uneconomic from the point of view of indigenous manufacturers.

Government are of the view that the industry should be given *direct protection* and have therefore arrived at the following conclusions on the Board's recommendations :—

- (i) All imports of grinding wheels would be prohibited throughout the financial year 1947-48 except for qualities which cannot be produced in India.
- (ii) A duty of 50 per cent would be imposed on the special qualities of grinding wheels which cannot be produced in India.
- (iii) A duty of 50 per cent. would be imposed in regard to varieties manufactured in India when it is decided to lift prohibition on their imports.

(iv) Government accept recommendation (4) above of the Board and necessary steps will be taken to give effect to it.

(v) Government also accept recommendation (5) and the Railway Board, M. G. O. and other Government agencies are being instructed to obtain their requirements of grinding wheels from indigenous production subject to satisfaction as to quality.

The Government of India are of the view that industries coming up for state assistance should be in the hands of public *limited companies* and have therefore decided that the protection granted to the grinding wheels industry shall be subject to the condition that the two concerns now engaged in the manufacture of grinding wheels, *viz.*, Messrs. Grindwell Limited, Bombay, and Messrs. Katta Grinding Wheel Works, Amritsar, should take early steps to convert themselves into public limited companies.

The grant of protection is also *subject to the condition* that the agreement reported to have been arrived at between the foreign and Indian shareholders in Messrs. Grindwell Limited, whereby the former had agreed to transfer their shares to the latter and the latter had agreed to take them up, is carried out at an early date.

13. Hurricane Lanterns Industry: --The claim of the hurricane lanterns industry in India for protection and assistance was referred by the Department of Commerce, Government of India, to the Tariff Board, in their Resolution No. 218-T(55)/45 dated the 16th February, 1946.

The Board, having considered the claim, submitted its report to the Government. The Board considered that the Hurricane Lanterns Industry qualified for grant of protection and made the following recommendations :—

Tariff Board's Recommendations:—

(1) The existing 30 per cent. revenue duty should be converted into a 30 per cent. *ad valorem* protective duty for a period of three or three and a half years from the 1st October, 1946.

(2) Government should give refund of duty paid on machinery which may be imported in future to develop this industry.

(3) Facilities should be given to the industry to train technical personnel abroad.

(4) Facilities should be given to import hurricane lantern manufacturing machinery from any country including the United States of America.

(5) Lantern manufacturers should form an Association.

(6) The Association of hurricane lantern manufacturers, formed, should approach Government with proposals for assistance in procurement of raw materials to enable the full productive capacity to be utilised.

Government's Conclusions :—

(1) The Government of India accept recommendation (1) and have decided to replace the existing revenue of 30% on hurricane lanterns by a protective *ad valorem* duty of 30% till the 31st March, 1949.

(2) Government are actively considering recommendation (2) relating to remission of duty on imported machinery.

(3) As regards recommendations (3) and (4), Government will, so far as possible, grant the requisite facilities whenever they are approached by the manufacturers.

(4) The Government of India wish to draw the attention of the industry to recommendations (5) and (6) of the Board contained in paragraph 2 of this Resolution and expect the industry to take necessary steps to implement these recommendations.

14. Machine Tools Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 13th July 1946, the Government of India referred to the Tariff Board a claim to protection received from the Machine Tools industry.

The Board having considered this claim submitted its report to Government. The Board considered that this industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

“(1) A protective duty of 25 per cent. *ad valorem* should be levied on all machine tools imported into India subject to certain exceptions. The industry should be protected upto 31st March, 1950 but the protective duty should remain in force only for one year in the first instance from the date on which these recommendations are put into effect. Chucks are an important ancillary part of machine tools and are covered by the definition of machine tools. Therefore the scheme of production devised for machine tools apply to chucks.

(2) In the case of machine tools which are not manufactured in India, remission of 15 per cent. duty should be made, thereby reducing the effective duty to the present level of 10 per cent. *ad valorem*. The remission should be granted at the time of collecting the duty and not as a refund after collecting the full duty. The Machine Tool Controller should certify on the application for import itself whether the machine tools to be imported are of the type not manufactured in India and the remission should be granted on the strength of the certificate.

(3) If during the period of protection any attempts are made by exporting countries to dump their products in the Indian market to the detriment of the local industry a review should be made and the protective duty should be adjusted accordingly.

(4) The duty on the testing equipment required by the machine tools industry should be refunded or remitted.

(5) The Central Board of Revenue should examine sympathetically the request of the industry to be permitted to write down depreciation at a higher rate than is the case at present.

(6) Government should create a special fund for the development of the machine tools industry and make an annual non-lapsable contribution of Rs. ten lakhs to this fund out of the additional revenue derived from the protective duty. The

authority entrusted with the administration of the fund should make such grants to the manufacturers of graded machine tools as it thinks are reasonable. The Machine Tool Controller and the Advisory Committee referred to in recommendation 19 below should be closely associated with the authority in the administration of this fund.

(7) The following classification should in future be adopted in the Accounts of Sea-Borne Trade of India as well as in the production statistics maintained by the Machine Tool Controller.

- (1) Lathes.
- (2) Drilling machines.
- (3) Shapping machines.
- (4) Planing machines.
- (5) Milling machines.
- (6) Band sawing machines.
- (7) Circular sawing machines.
- (8) Presses.
- (9) Chucks.
- (10) All others.

(8) Export of pig iron should be allowed only after India's industrial needs are satisfied.

9) Larger quotas for pig iron, steel, coke and coal should be allowed to machine tool manufacturers and they should be given a high priority in transporting these materials to their factories and shipping their finished goods to consuming centres.

(10) The present system of inspection established under the Machine Tool Control Organisation should not only be continued but further strengthened to enable the consumers to obtain certificates of inspection and this service should be rendered free of charge to the industry.

(11) During the first year of protection, the Machine Tool Controller should collect, as far as possible, information regarding c.i.f. prices of those qualities which are at present manufactured in India.

(12) Import control of machine tools on a quantitative basis should continue upto 31st March, 1950. Licences for imports

should be issued only in those cases where machine tools are not manufactured in India or where the Indian manufacturers are unable to supply the full demand within a reasonable period of time. This quantitative control should be exercised rigidly so as to minimise evasion. The Machine Tool Controller should satisfy himself whether or not a machine tool for which import licence is required is manufactured in India and where the machine tool is not manufactured in the country, import licence should be given without delay.

(13) Government should take early steps to import highly competent specialists with the least possible delay. They should be allocated to different machine tool manufacturers to render them technical advice and guidance.

(14) All Government and quasi-Government purchases of machine tools should be restricted to the Indian made goods as far as possible.

(15) The industry should examine the question of setting up a central organisation for heat treatment and gear cutting, and in the meantime factories which do not possess these facilities should take advantage of the surplus capacity of other factories.

(16) The industry should make every effort to produce precision machine tools with even closer limits of accuracy than those laid down at present for grade 1.

(17) Each first class factory should have a Liaison Officer to correlate its work with the researches which will be carried out at the National Metallurgical and Physical Laboratories.

(18) The Indian Machine tool manufacturers should adopt such a system of cost accounting in their factory as would enable the Tariff Board's Cost Accounts Officer to ascertain, with a fair degree of accuracy, the actual cost of production.

(19) An Advisory Committee consisting of representatives of manufacturers, importers and main consumers should be constituted to be in close touch with the various schemes of development and control."

Government's Conclusions:—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 14th June, 1948

have decided to accept the conclusion that the machine tools industry is a key industry and should be effectively fostered by positive state action, but are doubtful whether considering the present position of the industry, the levy of a protective duty, as recommended by the Board, would prove practicable or result in any material development of the industry. Government have taken special note of the Tariff Board's recommendation summarised in item (6) of paragraph 2 above, and are considering alternative methods of developing the industry including the grant of subsidy or other financial assistance to producers. One of the objects of any such aid would be to secure the manufacture locally of new and difficult types of machine tools. Government's decisions in this regard will be announced as early as possible. In the circumstances the Government of India do not feel that it is necessary now to take any action on recommendations (1) to (5) of the Board.

Government of India have accepted recommendations (7) to (14) and recommendation (19) and suitable action, where feasible, will be taken to supplement measures that have already been put into force in the Ministry of I. & S. in respect of these recommendations.

The Government of India have drawn the attention of the industry to recommendations (15) to (18) of the Board and trust that the industry will take necessary steps to give effect to them.

15. Motor Vehicle Battery Industry:—In their Resolution in the Department of Commerce No. 218-T(55)/45, dated the 15th March, 1947, read with paragraphs 2 and 7 of its Resolution No. 218-T(55)/45, dated the 3rd November, 1945, and paragraph 4 of the Resolution bearing the same number, dated the 16th February 1946, Government of India remitted to the Tariff Board for investigation, the claim of the Motor Vehicle Battery Industry for assistance or protection.

The Board having considered this claim, submitted its report to the Government. The Board considered that the motor vehicle battery industry was conducted on sound lines and that the

development of the industry was in the interest of the nation, and made the following recommendations :-

Tariff Board's Recommendations :—

- “(1) A protective duty of 80% *ad valorem* should be imposed on imports of motor vehicles batteries from the U. K. and it should remain in force for a period of 3 years. If the existing preferential margins in favour of U. K. and Burma are to be maintained under the provisions of the Indo-British Trade Agreement of 1939, and the Indo-Burma Trade Agreement of 1941, the duties should be 90% *ad valorem* (Standard), 80 per cent *ad valorem* (U. K.) and 68 per cent *ad valorem* (Burma). If, however, the general Agreement on Tariffs and Trade concluded at Geneva is brought into force the duties should be 80 per cent *ad valorem* (Standard), 80 per cent *ad valorem* (U. K.) and 68 per cent *ad valorem* (Burma).
- (2) The same rate of protective duty should be levied on imports of plates for motor vehicle batteries.
- (3) Should unforeseen circumstances cause a serious fall in the price of imports, the indigenous industry may apply to Government for a review under Section 4(1) of the Indian Tariff Act.
- (4) If the protective duty is imposed the following new head should be opened in the Tariff Schedule :—

Batteries for motor vehicles (including those batteries which are interchangeable for automobile purposes on the one hand and Radio, Telephone and Telegraph on the other).	Protective			
	90%	80%	68%	3
	<i>ad</i>	<i>ad</i>	<i>ad</i>	years.
	<i>valo-</i>	<i>valo-</i>	<i>valo-</i>	
	<i>rem.</i>	<i>rem.</i>	<i>rem.</i>	

and the existing tariff item 75(1) should be amended to exclude motor vehicle batteries and plates therefor.

- (5) Quantity and value of imported motor vehicle batteries should be separately recorded in the Annual Statement of Sea-Borne Trade.
- (6) The continuance of the present import control, though it may be necessary for conserving foreign exchange resources, will not be required as a means of protecting the industry.
- (7) The Council of Scientific and Industrial Research should be asked to take steps to have asbestos reported to be available in Mysore and Sarikella processed for the manufacture of containers.
- (8) Extensive experiments with varieties of wood suitable for separators should be undertaken at the Forest Research Institute, Dehra Dun, in collaboration with the principal battery manufacturers in the country.
- (9) Government should give all facilities for the procurement of raw materials, imported as well as indigenous by the manufacturers of motor vehicle batteries.
- (10) All battery manufacturers in India should be required to label their products "Made in India."
- (11) The industry should take immediate steps to evolve and adopt, in consultation with the Indian Standards Institution, suitable standard specifications for motor vehicle batteries as well as containers.
- (12) Indian battery manufacturers should take immediate steps to introduce maximum economy in the use of lead and make every effort to train up the workers, so as to attain a higher output per worker and thus reduce the labour cost per battery.
- (13) In case the two foreign companies, namely Chloride Storage and General Motors, expand their production of batteries to the serious detriment of the Indian manufacturers, Government should adopt necessary measures to safe-guard the Indian Section

of the Industry. Government should also enunciate at an early date their policy regarding the employment of foreign capital and enterprise in this country."

GOVERNMENT'S DECISION

"The Government of India, after careful consideration of the Board's report, feel that imports of Motor vehicle batteries should be allowed as freely as our international balance of payments position would permit—*vide* recommendation (6). With this end in view they have decided to accept recommendation (1) and (2) in order to enable the indigenous manufacturers to compete effectively with importers and take necessary steps to increase their output. The existing standard rate of 50% *ad valorem* and the preferential rates of 42½% on manufactures of U. K. will accordingly be replaced with the concurrence of the Legislature by protective duties of 86% and 80% *ad valorem* respectively when a bill to implement the recommendations of the Tariff Board, as accepted by Government in the light of their obligations under the General Agreement on Tariffs and Trade is introduced at the next session of the Central Legislature. The preferential rates applicable to imports from Burma will be notified when necessary. These protective duties will remain in force upto the 31st March, 1950.

The industry may approach Government when necessary with reference to recommendation (3). The Government of India also accept recommendations (4) (with necessary change in rate), (5) and (7). As regards recommendations (8) and (9) Government will, so far as possible, grant the requisite facilities whenever they are approached by the manufacturers. The Government of India wish to draw the attention of the industry to recommendations (10), (11) and (12) and expect the industry to take necessary steps to implement them. They are also prepared to assist the industry in all practicable ways if the situation envisaged in recommendation (13) arises.

A notification under Section 2 of the Protective Duties Act, 1946, is however immediately being issued, imposing on the articles in question *ad valorem* duties at the rates of 87% (standard) and 80 per cent (preferential) pending the introduction of legislation contemplated in the above paragraph."

16. Non-ferrous Metals Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 3rd November, 1945, the Government of India constituted a Tariff Board and referred to the Board a claim to protection received from the non-ferrous industry.

The Board, having considered this claim, submitted a report to Government. As prices of imported non-ferrous metals had risen considerably since submission of the Board's report, the Board was requested to reconsider its previous recommendations in the light of the prevalent c.i.f. prices. After further enquiries the Board had to modify some of the original recommendations. The Board considered that the industry was established on sound business lines and was eligible for protection. The following were the main recommendations of the Board :—

Tariff Board's Recommendations :—

(1) Removal of duty on copper unwrought and copper scrap should be confirmed.

(2) The present position according to which there is no duty on lead ingot and lead scrap is satisfactory and should be continued.

(3) The present position according to which there is no duty on zinc should be continued. There should be no duty on zinc scrap as well as zinc ingots, slabs, blocks or bars.

(4) The duty on tin and tin scrap should be removed.

(5) The duty on tin plates scrap should be removed and export of tin plate scrap from India should be prohibited.

(6) The duty on nickel and nickel scrap should be removed. The duty on nickel alloys should remain at the present level, *i.e.*, 30 per cent. *ad valorem* but made protective.

(7) So long as there is no production in India of other non-ferrous metals such as cobalt, chromium, tungsten and magnesium the existing duty of 30 per cent *ad valorem* on all these metals should be removed as (i) they are raw materials for other industries, (ii) they do not yield substantial revenue and (iii) Indian producers of alloys of these metals should be placed on a competitive basis with foreign producers.

(8) A protective duty of 10 per cent. should be levied on brass ingots to safeguard the Indian brass ingot industry. Brass ingots should be defined as containing (a) Copper 74 to 55 per cent. (b) zinc 26 to 42 per cent. and (c) components other than copper and zinc including impurities not to exceed 3 per cent. of which not more than one half should be tin.

(9) The existing revenue duty of 30 per cent *ad valorem* on yellow metal alloys other than brass (*i.e.*, gun-metal, bronze, bell-metal and phosphor bronze) should be converted into a protective duty at the same rate until the end of March, 1950.

(10) The Indian tin solder and other white metal alloys industry should be protected by an adequate duty instead of by a subsidy; in place of the existing duty of 30 per cent. there should be a protective duty on tin-solder at the same rate.

(11) The protective duty on other white metals should be 30 per cent. on the clear assumption that the duty on tin will be completely removed.

(12) Type metals should be treated as a separate item in the Tariff Schedule. Provided action on the recommendations in Tariff Board's report on antimony was taken and provided the duty on tin is removed the existing duty of 30 per cent on type metal may remain without risk to the indigenous type metal industry. The duty should be made protective and should remain in force until the end of March, 1950.

(13) So long as it is not produced in India, and zinc is free of duty, the duty on mazak containing 96 per cent. zinc value of imported brass sheets of 4 ft. x 4 ft. average 20 S. W. G. should be removed with a view to developing the diecasting industry in India.

(14) Other alloys, *i.e.*, nickel silver cupro-nickel, nickel alloys, etc. should continue to be subject to the 30 per cent *ad valorem* protective duty.

(15) The existing revenue duty of 30 per cent. on brass sheets should be converted into a 30 per cent. protective duty and remain in force until the end of March, 1950. Provision should be made for the adjustment of duty so as to maintain the tariff

at the figures assumed in the report. As in the case of brass ingot, so also in the case of brass sheets the protection is for the transitional period

(16) The same protective duty should apply to copper sheets although there is very little copper rolling in the country.

(17) The existing duty of 30 per cent *ad valorem* on zinc and lead sheets should be reduced to 20 per cent. The duty should be protective and *ad valorem*

(18) A protective duty of 35 per cent arsenical copper-rods and brass rods will be sufficient to protect the Indian Industry. Also all demands for arsenical copper rods by Government should be placed in the first instance on the Indian producers

(19) The existing duty of 30 per cent *ad valorem* on tubes and pipes and sections of brass and lead should continue but it should be made protective in place of revenue

(20) Duty on pipes and tubes made of copper should be converted into protective duty at 36 per cent for non-British manufacture and 24 per cent for British manufacture in place of the present 36 per cent standard *ad valorem* and 24 per cent. preferential revenue.

(21) The duty on brass wires should be raised from 30 to 35 per cent, it being made protective

(22) The duty on manufactured articles, such as steam and sanitary fittings, may continue at 30 per cent. *ad valorem* so as to bring it into level with the duty of semi-manufactures such as sheets and strips. The duty is to become protective.

(23) The hollow-ware industry is well established in the country and no special assistance is necessary for it.

(24) A protective duty of 20 per cent should be levied on imports of electrolytic copper rods. When this duty is imposed, the concession given to the cable manufacturers to import black copper rods free of duty should be withdrawn.

(25) Simultaneously with the imposition of duty, the present embargo on import of black copper rods should be lifted so that

the production of wires and cables may not be affected and the quality of indigenous production may be kept up to the mark.

(26) There should be a separate item in the Tariff Schedule for electrolytic copper rods with a protective duty of 20 per cent. all the other copper rods will be subject to a protective duty of 35 per cent.

(27) Item No. 72 (c) of the Customs Tariff Schedule which as it stands covers (a) bare copper wires (b) paper insulated cables and (c) A.C.S.R. (aluminium conductors steel reinforced)—all of which are subject to 10 per cent. *ad valorem* revenue duty — needs splitting up because while there is adequate capacity in the country for bare copper wires there is no capacity for paper insulated cables which would still have to be imported and on which therefore a lower duty would be reasonable. Item No. 73(1) of the Tariff Schedule which also includes bare copper wires, needs recasting when the commodity is put in under a separate item *viz.* 72(f) which will be only for bare hard drawn or annealed copper wires and cables of all sizes designed as parts of a transmission system.

(28) The duty on bare hard drawn or annealed electrolytic copper wire should be raised from the present figure of 10 per cent. to a higher figure because there is more capacity for them than there is demand in the country and because a duty of 20 per cent. will be imposed on black copper rod if the recommendation in this behalf is accepted. The duty to be imposed on wires should be 30 per cent protective.

(29) The third type of wire included in item 72(c) *viz.* A. C. S. R. will go with the bare hard drawn or annealed electrolytic copper wires and cables of all sizes for which a separate item 72(f) has been proposed.

(30) The reference to bare copper wires occurring in item No. 73(1) should be removed so that bare copper wires will be governed by only one item *viz.* 72(f).

(31) The existing *ad valorem* revenue duty of 7½ per cent. on rubber insulated cables (*vide* item No. 73(6) of the Tariff Schedule) may remain unchanged as also the working of the item.

(32) When effect is given to the recommendations for protection and assistance, the existing restrictions on import of non-ferrous metals, ores, scrap, semi-manufactures and manufactures should no longer be necessary and should be removed.

(33) As India will remain deficient in respect of copper, brass, lead, tin, zinc and nickel (to mention only the more important nonferrous metals) for a considerable time to come, every attempt should be made (1) to conserve scrap by placing an embargo on export of scrap of all non-ferrous metals and alloys and (2) to attract scrap from abroad by removing the duty on scrap of all non-ferrous metals and alloys.

(34) For the expansion and development of the non-ferrous metals industry in the country, a refund of duty should be given on all plant and machinery imported since the case of the non-ferrous industry was referred to the Board.

(35) Considering the deficiency of India in non-ferrous metals, a more vigorous policy on the part of the Central Government in regard to prospecting and proving of mines is called for. In the Metallurgical Institute proposed to be established by the Central Government at Jamshedpur, there should be full fledged non-ferrous section with facilities for pilot plants where concentration of ores and extraction of metals from ores or concentrates may be tried for results of commercial value.

(36) Government should arrange for the training of technically qualified persons for the non-ferrous metals industry in industrially advanced countries. The industry should employ suitable technical personnel and appoint a qualified Technical Director.

(37) Government should purchase metals or suitable ores in the world market and build up a reserve in the country and assist private industrialists in purchasing at concession prices associated with bulk orders and Government's good offices as is being done in other countries (e.g. the U. S. A. and U. K.)

(38) In regard to the disposal of non-ferrous metals by the Disposals Directorate of the Department of Industries and Supplies, Government should take into confidence the representative of the non-ferrous industry, including cottage industry, with

a view primarily to making the best possible use of the scrap in the interest of the industry. For this purpose the Officer in charge of development of non-ferrous metals in the Department might be associated with the disposal of the non-ferrous scrap.

(39) A watch should be kept on the effect of the removal of duty on primary metals lest foreign capitalists might set up plants for the production of alloys and other non-ferrous articles in India.

(40) The present position according to which India gets her quota of tin from the International Tin Control Board through the U. K. Ministry of Supply is not satisfactory and India should have direct access to the International Tin Control Board for getting its full share of tin. Every attempt should be made to have the present Indian quota of 2000 tons raised to a figure approaching 6000 tons which can be easily absorbed by the Indian alloy industry.

(41) Facilities should be given to the Metal Corporation of India Ltd., for importing certain machinery from the U. S. A. in preference to the U. K. as the U. S. A. deliveries are much quicker.

(42) Protection in all cases should continue for the period ending March, 1950.

Government's Conclusions :—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 11th June, 1948 have after careful consideration, decided to accept all the recommendations of the Board except Nos. (15) in so far as it relates to the Tariff value and (34). Copper unwrought, copper scrap, lead ingots, lead scrap, zinc ingots, slabs, blocks, or bars and zinc scrap should continue to be free of import duty. The duty on tin, tin scrap and tin plate scrap, nickel and nickel scrap, cobalt, chromium, tungsten, magnesium mazak and scraps of all other non-ferrous metals and alloys should be removed. A protective duty to remain effective till the 31st March, 1950, should be levied on brass ingots at 10 per cent. *ad valorem* on zinc sheets and lead sheets at 20 per cent. *ad valorem*, on yellow metal alloys other than brass, tin solder, other white metal alloys, type metal,

nickel alloys, brass sheets, manufactured goods such as steam and sanitary fittings, tubes, pipes and sections of brass and lead bare hard drawn or annealed electrolytic copper wires and cables, A. C. S. R. at 30 per cent *ad valorem* on copper sheets and pipes and tubes of copper at 24 per cent *ad valorem* on British manufacture and 36 per cent. *ad valorem* on non-British manufacture; on copper rods other than electrolytic copper rods at 20 per cent. *ad valorem* on British manufacture and 30 per cent. *ad valorem* on non-British manufacture. Though on the basis of existing prices there is strictly speaking no need to protect brass ingots, a token protection in the shape of a protective duty of 10 per cent. *ad valorem* should be granted so as not to upset this important industry by full and complete withdrawal of the revenue duty that was being levied at present.

Government have accepted recommendations (5), (24), (26), (30), (31), (32), (33), (35), (37), (38) and (40) and will take steps to implement them. As recommended by the Board, Government would as far as possible, place all demands for arsenical copper rods on Indian producers in the first instance and arrange for the training of technical persons abroad. As regards recommendation (41) Government will try to grant the requisite facilities whenever they are approached by the manufacturers.

With regard to recommendation (15) Government consider that the Tariff value cannot, on principle, be manipulated to protect an industry but it is open to the industry to apply for action under Section 4(1) of the Indian Tariff Act, 1934, if the prices of imported brass sheets fell below the figure stated by the Tariff Board.

Government are considering recommendation (34) relating to remission of duty on imported machinery. Government cannot however agree to refund the customs duty already paid by the industry on imported machinery.

The Government of India have drawn the attention of the industry to recommendation (36) regarding appointment of technical personnel and Director by the industry and also to recommendation (39) and expect the industry to implement them.

17. Screw Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45, dated the 3rd November, 1945, The Government of India referred to the Tariff Board claim to protection received from Woodscrews Industry.

2. The Board, having considered this claim, submitted its report to Government. The Board considered that the iron and steel woodscrews industry qualified for the grant of protection in the transition period and made the following recommendations :—

Tariff Board's Recommendations :—

(1) "Manufacturers of woodscrews must endeavour to obtain more efficient and up-to-date, machinery.

(2) The Director General, Industries and Supplies, should make available to the woodscrews industry at least 530 tons of steel wire per annum during the period of protection recommended by us. The manufacturers of woodscrews should form themselves into an association and order wire in bulk from the wire manufacturers and distribute it among the Indian producers.

(3) In our calculation of the cost of production we have taken the price of wire at Rs. 532 per ton which is based on the current price of wire. If this price is increased substantially, the measure of protection recommended by us will have to be re-examined.

(4) The existing revenue duty of 30 per cent on iron and steel woodscrews should be converted into a protective duty of 30 per cent *ad valorem* and the protective duty should remain in force till the 31st March, 1950. If during the period before 31st March, 1948 the landed cost of imported woodscrews of the size of 1" x 8" inclusive of duty goes below 14 annas per inch gross, a subsidy should be paid to the Indian manufacturers equal to the difference between the lowest landed cost in the preceding half year and the fair selling price, namely 14 annas per inch gross. The subsidy to be given during the period from 1st April, 1948 to 31st March, 1950 should be the difference between the lowest landed cost and 12 annas per inch gross. The subsidy proposed should be paid every six months and should be given on the basis of sales during the preceding half year. The scale of subsidy would be applicable only to the existing manufacturers,

So far as the future manufacturers are concerned, they should not be debarred from subsidy but in their case the fair selling price should be fixed *ad hoc* on cost accounting of the manufacturer provided that in no case should the fair selling price so fixed exceed 14 annas per inch gross during the period ending 31st March, 1948 and 12 annas per inch gross during the period from 1st April, 1948 to 31st March, 1950.

(5) Licences to import die steel and high speed steel should be given freely to the woodscREW industry.

(6) If the woodscREWS industry is to be developed on a rational basis, the factories must be spread out at convenient centres throughout the country."

Government's Conclusions :--

(1) The Government of India wish to draw the attention of the industry to recommendation (1) above and expect that the industry will take the necessary steps to give effect to it.

(2) Government accept recommendation (2) and steps have already been taken in the Department of Industries and Supplies to make available to the woodscREWS industry the required quantity of steel wire. The Government of India expect that manufacturers of woodscREWS will take the necessary steps to form themselves into an association and place bulk orders for their requirements of steel wire.

(3) The Government of India accept recommendation (3) in paragraph 1 above and will take suitable action to implement it, if and when necessary.

(4) The Government accept the Board's recommendation for the levy of a protective duty contained in paragraph 2 (4) above and have decided to replace the existing revenue duty of 30 per cent on iron and steel woodscREWS assessed at present under item 63(28) of the Indian Customs Tariff by a protective *ad valorem* duty of 30 per cent till the 31st March, 1950. In view of the figures quoted by the Tariff Board relating to the indigenous cost of production of woodscREWS and the cost of the imported article, Government have come to the conclusion that

30 per cent protective duty would adequately safe-guard the industry in the transition period and they are unable therefore, to accept the Board's recommendation that annas 14 per inch gross during the period ending 31st March, 1948 and annas 12 per inch gross during the period from 1st April, 1948 to 31st March, 1950 should be taken as the c.i.f. price limits for purposes of granting further assistance to the industry.

(5) As regards recommendation (5) Government will grant the requisite facilities whenever they are approached by the manufacturers.

(6) The Government of India accept recommendation (6) and will take such steps as are possible to ensure regional development of the woodscrews industry on rational lines in respect of the plants to be set up in future.

18. Sewing Machine Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45, dated the 4th May, 1946, read with their earlier Resolution dated the 3rd November, 1945, the Government of India referred to the Tariff Board a claim for protection received from the Sewing Machine Industry.

The Board, having considered the claim, submitted its report to the Government. The Board considered that the sewing machine industry qualified for the grant of protection in the transition and made the following recommendations :—

Tariff Board's Recommendations :—

- (1) A protective duty of 24 per cent. *ad valorem* should be imposed on sewing machines imported from U. K. which should remain in force up to the 31st March, 1949.

If there is an appreciable fall in the *c.i.f.* prices or in the selling expenses of Singer sewing machines 15 K 81 and 15 K 80, which may lower the margin of difference between the retail selling prices of these two Singer machines and the corresponding 'Usha'

i.e. a difference of Rs. 50 in 1946-47, Rs. 40 in 1947-48 and Rs. 30 in 1948-49, the measure of protection is likely to be jeopardised and it would be open to the industry to apply to Government for a review of the case.

- (2) The present Tariff Item 72(10) of the First Schedule should be split up into two items as below :—

Item	Article	Duty
72(10)	Knitting machines (and parts thereof to be worked by manual labour or which require for their operation less than one-quarter of one brake-horsepower.	The rate of duty to remain the same as now, on a preferential revenue basis.
72(11)	Sewing machines (and parts thereof) to be worked by manual labour or which require for their operation less than one-quarter of one brake-horse-power.	There should be a protective duty of 24% <i>ad valorem</i> until the 31st March 1949.

- (3) In order to encourage expansion of the industry, the import duty on machinery required for the industry should be refunded with retrospective effect from 4th May, 1946, which is the date of the reference of the case to the Board.

- (4) The industry should maintain satisfactory cost accounts for sewing machines in future.

Government's Conclusions :—

The Government of India accept recommendation (1) and have decided to replace the existing standard rate of 36 per cent *ad valorem* and the preferential rates of 24 per cent. on manufactures of U.K. and 12 per cent. on manufactures of Burma by protective duties of 36 per cent, 24 per cent and 12 per cent respectively. These protective duties will remain in force up to the 31st March, 1949.

Government accept recommendation (2) and have accordingly decided to split up the existing tariff item 72(10) as suggested by the Tariff Board.

Government are actively considering recommendation (3) relating to remission of duty on imported machinery. There is, however, no sufficient reason for refunding the amount of customs duty already paid by the industry on imported machinery.

The Government of India wish to draw the attention of the industry to recommendation (4) and expect the industry to take necessary steps to implement it; Government also propose to satisfy themselves that the industry actually maintains satisfactory cost accounts in respect of the manufacture of sewing machines in future.

19. Steel Baling Hoops Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated 3rd November, 1945 the Government of India constituted a Tariff Board and referred to it the claim for protection for the Steel Baling Hoops Industry.

The Board having considered this claim submitted its report to the Government. It has considered that the Steel Baling Hoops Industry qualifies for the grant of protection in the transition period and has made the following recommendations :

Tariff Board's Recommendations :—

(1) The J. K. Iron and Steel Company should be given a subsidy to cover the actual railway freight on steel billets from Calcutta to Cawnpore and on hoops from Cawnpore to Calcutta, which at present works out at Rs. 83 per ton of hoop produced. This subsidy is to be given to the Company on the production at Cawnpore only up to the 30th June, 1947. The subsidy should be a charge on the Equalisation Fund built up by the Iron and Steel Controller. If for any reason it is found that this charge cannot be borne on the Equalisation Fund, the subsidy should be met from the general revenues.

(2) A protective *ad valorem* duty of 30 per cent. should be levied on all imports of baling hoops from the United Kingdom. The duty should remain in force up to the 31st March, 1949.

(3) If the c.i.f. price of jute baling hoops falls below Rs. 300 per ton and of cotton baling hoops below Rs. 400 per ton appropriate action should be taken to increase the duty under section 4 (1) of the Indian Tariff Act, 1934.

(4) The Government of India should undertake the responsibility of supplying the necessary quantity of billets to the J. K. Iron and Steel Company at Cawnpore, so long as production is carried on there, subject to the proviso that no billets should be supplied at Cawnpore after the 30th June, 1947. Thereafter, Government should resume the supply of billets at the new production centre from the date of commencement of production up to the 31st March, 1949. The billets should be supplied at Rs. 160 per ton f.o.r. Calcutta.

(5) The Mysore Iron and Steel Works should be supplied by the Government of India with billets up to a maximum of 4,200 tons until July, 1947, at Rs. 160 per ton f.o.r. port.

(6) The Iron and Steel Control should continue until the 31st December, 1947 so far as it is necessary to give effect to the recommendations. The import of hoops should be allowed only on licence up to the limit of the quantity that may be found to be absolutely necessary after taking into account the domestic supply available.

(7) Government may decide the date from which new prices should be brought into operation under which consumers should get jute baling hoops at Rs. 429 per ton f.o.r. port and cotton baling hoops at Rs. 550 per ton f.o.r. port.

(8) Steps should be taken to prescribe specifications for jute and cotton baling hoops in consultation with consumers and leading importers.

Government's Conclusions :—

(9) A Government Metallurgical Inspector should issue test certificate that all jute baling hoops and cotton baling hoops going out of the works conform to the standards prescribed.

(10) A review of the baling hoop industry should be made in the first quarter of 1949''.

The Government of India as per their Resolution published in the Gazette Extra-ordinary dated 10th April, 1948 have accepted the Board's recommendations (2) and (3) but they have decided after careful consideration that these recommendations in so far as they relate to jute baling hoops shall not be given effect to until the J. K. Iron and Steel Company Ltd., producers of jute baling hoops have fulfilled the conditions laid down in paragraph 4 below. With regard to cotton baling hoops also these recommendations will be given effect to when Government are satisfied that the production of cotton hoops has reached such a stage as would bring the industry within the terms of paragraph 5 of the Commerce Department Resolution referred to in paragraph 1 of this resolution.

(a) Jute baling hoops being an essential ancillary to one of the most important industries of the country mainly situated in Bengal, the J. K. Iron and Steel Company Ltd., should shift its factory from Cawnpore to Asansol or Calcutta. The Company would doubtless appreciate that it is in its own interest to do so.

(b) The J. K. Iron and Steel Company Ltd., should convert itself into a public limited Company.

Having regard to the considerations in paragraphs 3 and 4 above it has been decided that the existing item No. 63(14) in the Import Tariff Schedule under which all steel baling hoops are assessed to duty, should be elaborated in order to show jute and cotton baling hoops separately.

In view of what is stated in paragraph 4(a) of this Resolution Government do not find it necessary to consider the Board's recommendation No. (1) in paragraph 2 above.

As regards recommendations (4) and (5) the industry may rest assured that Government will be prepared to assist it in all reasonable ways to secure its requirements of billets in quantities and at prices that will be reasonable in the circumstances that exist.

With regard to recommendation (6) the present import policy of Government is so devised as to ensure proper offtake of the indigenous product.

Recommendations (8) and (9) are under the consideration of Government.

20. Steel Belt Lacing Industry :—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 12th October, 1946, the Government of India referred to the Tariff Board a claim to protection received from the Steel belt lacing industry.

The Board having considered this claim submitted its report to Government. The Board, considered that the steel belt lacing industry qualified for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations :—

“(1) The present revenue duty of 10 per cent. *ad valorem* should be converted into a protective duty at the same rate and should remain in force up to 31st March, 1950.

(2) Steel belt lacings should be shown as a separate item in the Annual Statement of Seaborne Trade and in the production statistics.

(3) Government should allocate to the manufacturers of steel belt lacings at least 400 tons of steel per annum and this quantity should be distributed amongst the various manufacturers in the ratio of their rated capacity. The allocation should be done every quarter and the steel belt lacing manufacturers should submit quarterly accounts of their production and stocks to Government.

(4) If the manufacturers are in a position to import cold rolled steel strips to supplement such quantities of either mild steel black sheets or panel plates as they can obtain locally in order to increase their production, Government should give them all facilities for importing this material from abroad.

(5) So far as possible, all Government requirements of steel belt lacings should be met from indigenous production.

(6) The producers of steel lacings should maintain their accounts in a systematic manner and up-to-date so that if the industry comes for review again, more accurate costings can be done.”

Government's Conclusions :—

With regard to recommendation (1), the Government of India have after careful consideration come to the conclusion that

as the principal producers of steel belt lacing are now in Pakistan, the case should be referred back to the Tariff Board for re-examination. Recommendation (2) will be considered on receipt of the revised report from the Board.

Steps are being taken to give effect to recommendations (3) and (5).

As regards recommendation (4) the Government of India would be prepared, so far as possible to grant the requisite facilities, whenever they are approached by the manufacturers.

The Government of India wish to draw the attention of the industry to recommendation (6) contained in paragraph 2 of this Resolution and desire that suitable action thereon should be taken by industry.

21. Wire Healds Manufacturing Industry:—In their Resolution in the Department of Commerce No. 218-T(55)/45 dated the 15th March, 1947, the Government of India referred to the Tariff Board a claim to protection received from the wire healds manufacturing industry.

The Board considered that this industry did not qualify for the grant of protection and made the following recommendations :—

Tariff Board's Recommendations:—

(1) "A comparison of the estimated fair selling price of the indigenous article with the landed cost of imports without duty shows that industry needs no protection at present.

(2) Facilities should be given to the manufacturers of wire healds to import up-to-date machinery and for securing technical personnel from abroad.

(3) The industry is apprehensive of serious competition from imports of low priced wire healds in future. Should such competition arise and jeopardise the position of the industry it may approach Government for institution of a summary enquiry."

Government's Conclusions:—

The Government of India as per their Resolution published in the Extraordinary Gazette dated 3rd June, 1948 have decided to accept recommendation (1) of the Board and agreed that the industry does not at present need any protection. Government will take suitable action on recommendations (2) and (3) when approached by the industry.

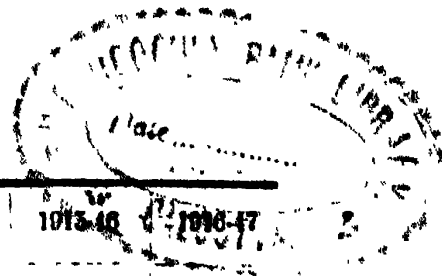
Articles.		1935-36	1936-37	1937-38	1938-39	1939-40
Belting for Machinery (of cotton)		8,41,624	8,79,834	8,77,535	8,48,300	7,67,625
Belting for machinery of Hair ...		...	10 08,136	10,30,500	10,78,735	8,59,896
of Leather ...		24,71,768	18,75,158	27,49,437	22,92,747	25,22,679
of other materials (including coil)		22,37,680	10,80,905	13,69,102	8,98,921	11,88,283
Hardware (excluding cutlery and electroplated ware)	Q V	3,26,75,705	2,89,35,307	3,91,22,115	2,57,27,194	2,28,86,008
Instruments, Apparatus, & Appliances & parts thereof—						
Electric Fans and parts thereof ...	Q V	32,51,284	35,15,896	31,07,142	25,09,550	18,64,329
Electric wires and cables ...	Q V	93,51,606	93,64,975	1,21,78,652	1,32,14,729	1,14,35,403
Telegraph & telephone instruments and apparatus ...	Q V	17,50,862	19,19,983	22,99,187	22,60,645	12,69,129
Electric Bulbs (gas filled) ...	No. V	28,99,995 19,42,918	21,46,068 16,38,946	27,25,110 19,93,972	16,55,758 14,62,388	15,39,951 12,40,756
Electric Bulbs (Vacuum)	No. V	92,71,908 16,58,365	71,36,554 12,49,764	1,11,04,633 15,77,077	54,19,960 9,57,812	95,92,907 10,38,215
Electric Bulbs for Automobiles ...	No. V	12,05,027 1,02,079	10 32,618 99,068	12,20,901 1,17,477	11,27,170 1,02,920	8,05,845 95,230
Electric Bulbs for torches ...	No. V	1,20,12,182 2,64,284	12,629,136 3,28,283	1,22,42,367 2,87,520	1,03,12,316 2,48,276	1,21,12,046 2,59,686
Wireless valves	No. V	24,853 80,246	...	...	...	...
Electric lamps (other than)	No. V	17,92,900 11,21,887	28,48,819 11,42,894	31,10,365 13,56,678	27,46,962 10,87,962	17,82,972 6,55,265
Parts & accessories of electric lamps	V	12,14,393	14,02,202	4,29,933	2,86,206	2,84,529
Batteries	V	20,61,246	25,73,053	25,20,825	21,52,071	22,80,351

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
7,85,888	7,83,184	5,92,280	4,50,484	13,02,807	9,25,292	14,50,889
9,14,241	12,03,277	10,33,111	12,03,240	23,54,242	25,07,598	30,54,408
25,02,263	31,58,128	25,77,626	58,61,009	57,29,719	50,64,188	46,47,820
19,86,812	16,21,234	5,08,071	9,92,449	16,08,340	31,53,182	32,30,499
2,07,10,265	2,18,21,243	1,00,54,644	93,06,653	1,20,19,559	2,34,85,030	3,73,78,581
14,27,414	11,63,985	10,52,987	7,69,085	1,02,973	86,474	18,66,258
1,02,42,200	77,05,187	68,37,146	65,02,710	1,20,80,193	1,79,67,781	1,01,78,907
13,14,527	15,88,605	10,33,200	11,08,106	23,38,825	10,49,004	38,65,203
12,55,483	12,85,696	13,15,834	7,91,871	22,02,625	50,20,814	22,62,186
8,40,202	11,65,963	12,05,356	11,06,280	21,09,247	73,33,221	23,22,940
70,05,778	74,03,717	17,02,861	4,50,220	8,02,800	21,35,541	15,76,918
9,28,989	10,33,878	5,00,476	2,30,466	1,05,551	12,39,890	6,48,478
14,14,977	28,76,975	2,70,910	1,56,884	2,96,037	1,70,440	1,36,311
1,85,726	2,08,081	79,117	48,477	82,895	55,351	62,066
1,00,89,611	1,13,17,282	8,91,544	12,65,561	17,86,115	60,87,791	1,88,15,999
2,52,279	2,00,465	94,773	1,32,499	2,77,817	7,43,524	21,69,499
...	...	...	...	...	...	...
21,55,482	18,89,427	85,019	19,766	96,645	19,14,818	40,28,810
8,26,754	6,58,056	85,816	70,218	1,23,040	10,24,314	63,97,368
3,11,067	2,36,277	85,180	25,567	72,371	1,50,795	3,91,818
3,87,500	1,59,950	5,37,199	1,09,387	3,06,560	5,12,208	6,17,413

Articles.		1933-36	1936-37	1937-38	1938-39	1939-40
Carbons electric (including Furnace Electrodes)	V	2,14,877	1,98,098	2,71,400	2,78,052	3,77,590
Accumulators (including parts)	V	7,57,218	6,87,910	7,05,920	6,38,945	7,91,685
Condensers, electric	V	36,435	48,781	17,004	65,504	75,231
Electric bell apparatus (not telegraphic or telephonic)	V	54,074	59,020	91,951	75,092	80,502
Electric Lighting Accessories and fittings (including switches)	V	8,10,627	6,45,149	7,68,211	6,95,086	7,08,038
Electrical Instruments (other than telegraphic and telephonic)		16,06,830	18,95,426	18,13,211	19,17,354	19,05,173
Electromedical Apparatus (including X-ray Apparatus)	V	4,90,815	3,63,511	6,58,402	4,95,717	5,31,901
Switch boards (other than telegraph and telephone)	V	1,14,310	3,10,487	4,73,446	5,10,751	3,20,108
Electrical Porcelain ware	V	...	...	1,32,954	1,34,940	1,40,444
Electrical goods and apparatus not enumerated	V	85,54,019	29,86,055	39,00,125	40,14,542	34,74,978
Total of Electrical, including telegraph and telephone apparatus, not being machinery		3,08,34,305	3,03,61,285	3,40,75,120	3,31,29,082	2,87,43,404
Scientific apparatus and Instruments.		16,31,350	14,21,079	18,30,893	18,54,412	13,13,545
Surgical Instruments & Apparatus ...	V	15,38,518	13,78,166	13,96,958	12,37,115	10,18,905
Wireless Apparatus ...	V	28,30,400	35,30,071	47,70,032	41,14,655	49,91,008

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
0,45,394	7,28,965	5,09,641	8,41,772	0,45,875	11,14,004	7,78,172
8,72,729	0,82,270	3,76,292	0,00,388	13,81,213	12,07,892	18,46,306
69,513	1,51,912	1,40,666	1,34,215	3,00,006	4,04,003	2,05,156
42,843	1,65,500	45,032	13,500	56,312	94,726	0,44,801
0,48,445	8,63,790	1,15,776	2,96,234	1,40,080	5,37,920	17,98,000
3,56,947	4,10,569	5,16,777	3,07,714	4,00,314	0,73,742	28,66,684
5,92,029	0,08,845	3,45,650	2,75,024	5,82,032	7,91,255	13,73,040
2,07,631	3,54,977	2,52,521	1,72,817	2,71,937	5,29,488	0,12,233
1,17,432	1,46,059	55,604	47,698	1,78,480	94,585	1,79,596
31,37,020	31,00,478	15,25,757	17,38,905	31,99,628	51,44,904	1,18,49,894
2,48,95,058	2,40,08,902	1,00,99,842	1,53,81,876	2,61,06,495	4,49,01,538	5,95,77,988
9,31,632	6,75,322	4,05,955	4,28,767	9,05,720	18,45,972	18,48,570
10,92,050	18,40,390	6,45,282	7,47,988	8,45,680	17,43,719	80,99,446
44,32,916	52,49,844	30,74,915	19,94,490	13,22,276	20,01,790	2,00,711,00

Articles.		1935-36	1936-37	1937-38	1938-39	1939-40
Machinery & Mill Works. Prime movers other than Electrical Locomotives (including those for Railways, Oil Engines)	No. V	35 2,14,550	59 3,46,738	47 3,96,778	87 6,15,991	24 2,81,178
Steam Engines (Locomotives)...	No. V	32 4,31,876	58 5,05,088	56 8,06,332	45 0,87,009	84 0,79,763
Railway Locomotive Engines & tenders & parts	V	56,57,884	46 25,200	44,20,468	61,26,785	65,74,215
Gas Engines ..	No V	33 1,25,011	36 72,041	47 1,33,390	27 81,149	21 67,256
Oil Engines for marine Purposes	No V	79 4,65,794	96 2,67,459	145 8,77,381	101 2,08,673	157 5,41,849
Steam Engines other than Locomotives.	No. V	68 3,09,410	88 7,11,663	46 3,57,523	54 6,32,186	48 3,41,538
Control & Switch gear.	V	44,84,641	48,81,705	54,82,975	90,04,050	59,82,895
Generators, alternators and dynamos.	V	21,58,817	39,78,088	25,89,569	36,96,763	26,29,964
Electric Motors.	V	42,35,013	35,25,302	46,92,381	63,12,027	41,71,901
Transformers.	V	19,00,065	19,66,052	26,23,071	25,62,716	21,93,483
Turbo generating Sets.	V	7,06,491	13,29,673	8,88,702	37,83,363	7,68,490
Aerated water making machinery.	V	34,500	35,887	36,824	34,988	21,683
Agricultural Tractors & Parts.	V	4,74,421	6,13,739	5,11,296	7,34,855	13,98,687
Boilers.	V	76,25,902	87,04,754	1,16,71,607	1,40,19,922	85,45,378
Boot & Shoe Mfg. Machinery.	V	4,53,279	4,80,074	4,40,897	4,59,295	2,23,676
Leather tanning & Curing Machinery.	V	92,206	1,20,987	1,84,383	54,702	1,05,861
Machine Tools.	V	...	23,17,800	30,43,843	30,67,462	44,31,066



1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
14 1,87,640	36 3,24,200	8 1,02,834	...	4 10,513	10 70,820	40 7,91,187
47 4,18,503	47 5,90,276	6 2,00,391	...	3 74,033	9 2,04,804	55 13,59,148
21,89,728	32,98,976	15,77,246	16,08,751	15,55,739	15,00,760	10,40,440
8 24,680	5 10,504	1 1,045	1 58,844	1 7,118	3 0,220	18 53,051
116 1,08,760	116 1,38,487	49 91,017	8 41,723	13 60,000	25 1,27,100	65 4,03,307
9 81,138	15 2,81,592	10 1,45,174	28 1,59,693	12 58,855	33 1,75,750	38 4,81,132
49,82,516	62,61,904	61,58,173	55,52,930	77,71,305	95,53,477	1,15,86,707
16,38,441	22,49,270	24,08,001	30,18,661	30,44,134	32,63,370	94,06,748
32,90,111	53,88,848	43,96,865	42,48,303	67,10,202	69,72,883	95,77,92
19,11,763	17,84,491	18,44,809	28,42,399	53,63,804	37,84,178	42,91,696
5,29,712	1,20,316	9,68,179	19,53,226	10,41,237	6,03,876	22,42,567
8,004	6,642	5,195	1,552	...	8,376	30,193
18,88,362	28,48,807	6,91,450	95,507	8,16,038	22,50,091	34,09,126
36,06,577	59,74,619	47,86,442	45,07,563	79,00,822	1,12,29,514	1,06,18,596
1,42,298	1,39,111	1,74,074	1,75,382	2,99,219	6,14,814	9,74,884
1,19,120	74,358	42,147	1,17,317	1,28,129	1,24,640	2,55,657
56,88,022	60,30,007	47,89,198	28,48,549	1,45,77,947	1,71,72,841	1,70,26,842

Articles.		1935-36	1936-37	1937-38	1938-39	1939-40
Mining Machinery	V	41,21,684	73,54,137	16,92,840	25,16,546	48,45,268
Oil Crushing & Refining Machinery.	V	21,76,983	27,59,773	22,80,274	44,18,812	28,76,601
Paper Mill Machinery.	V	8,05,024	7,65,109	44,89,450	27,66,549	13,85,734
Pumping Machinery ...	V	30,58,451	30,77,093	26,14,663	34,66,453	37,47,928
Refrigerating machinery ...	V	14,62,913	15,54,110	28,28,692	13,87,228	21,23,998
Rice & flour Mill Machinery ...	V	9,35,768	7,09,557	8,85,463	6,84,900	5,69,555
Saw Mill & Wood Working Machinery ...	V	5,22,390	4,52,242	4,13,308	4,08,698	4,27,018
Sewing & Knitting Machines ...	No. V	84,755 65,75,445	64,791 51,45,540	91,088 71,53,941	62,240 40,58,310	75,675 63,15,041
Parts of Sewing Knitting machines & accessories	V	8,69,572	9,51,365	10,46,480	7,66,194	10,05,851
Sugar Machinery	V	65,71,502	95,16,462	69,37,931	61,36,959	50,84,254
Tea Machinery ...	V	12,62,920	14,77,275	20,86,928	22,63,401	17,21,159
Textile Machinery	V	3,41,94,779	2,75,33,890	4,50,49,398	3,78,77,460	2,68,79,052
Typewriters ...	No. V	15,872 17,31,909	15,829 15,87,380	20,683 19,54,996	12,632 13,67,477	15,161 18,12,254
Metals and Ores						
Aluminium ...	Cwt. V	63,516 45,11,904	63,246 43,43,688	66,832 52,70,222	57,853 46,30,017	31,598 25,56,202
Antifriction Metal	Cwt. V	2,602 2,25,552	2,233 1,86,148	2,046 1,88,733	1,677 1,69,104	2,320 2,82,540
Brass, Bronze and Similar alloys and Manufactures there of :—						
Unwrought ...	Cwt. V	2,142 30,187	3,070 75,808	820 34,230	417 16,725	1,112 33,443
Yellow Metal Sheets ...	Cwt. V	... ...	... ...	... ...	22,45,94 69,77,303	18,31,27 46,00,123
Yellow Metal Circles ...	Cwt. V	... ...	... ...	... ...	2,24,594 8,40,056	1,33,127 4,86,547

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
31,82,275	17,96,850	27,34,504	24,58,789	77,10,269	1,09,23,652	66,90,174
14,82,698	6,75,487	3,08,885	3,46,075	8,73,202	6,18,804	49,56,493
31,07,814	31,09,025	14,99,820	25,13,709	24,99,767	24,01,557	30,46,276
26,08,885	31,36,052	27,47,635	25,05,678	32,44,775	46,20,551	77,01,105
17,99,333	20,47,152	2,65,827	6,73,843	5,41,440	14,30,951	40,50,598
2,71,699	2,05,270	57,768	1,13,918	3,04,319	5,90,581	21,21,748
6,53,983	15,14,453	11,27,034	9,95,557	16,73,550	22,28,268	19,36,724
34,951	41,107	18,577	4,309	10,090	28,320	59,783
40,66,474	43,42,508	18,68,086	7,43,592	12,13,250	34,29,643	81,54,275
10,10,342	18,36,536	9,20,127	11,22,657	14,42,404	28,80,254	38,72,147
40,87,285	20,41,642	7,73,103	8,20,380	11,07,144	30,43,109	55,44,094
16,20,007	11,33,987	12,48,959	22,09,174	42,76,801	47,85,707	18,51,583
25,76,635	2,84,22,308	2,77,33,757	3,19,39,099	3,37,85,589	4,33,97,842	5,87,92,588
15,945	14,367	7,685	2,340	4,773	30,785	28,694
22,07,050	22,39,084	16,53,808	4,29,721	9,74,063	73,92,859	75,90,776
26,068	5,406	413	324	27,215	1,09,553	2,34,148
37,67,395	9,01,204	52,116	41,400	24,19,196	90,21,651	1,83,30,441
1,262	1,424	618	401	144	350	320
1,88,666	2,55,196	1,04,115	65,824	35,565	80,473	71,282
672	135	263	29	1,006	37,087	278,8118
21,649	5,086	9,578	1,399	28,538	16,18,005	1,26,55,65
5,289	12,674	3,861	22	...	83,786	2,27,702
2,79,425	8,51,018	2,19,642	699	...	58,88,236	41,97,981
9,572	125	...	...	...	...	...
6,19,711	7,548	...	...	...	...	...

Articles	...	1935-36	1936-37	1937-38	1938-39	1939-40
Wrought :—						
Rods	... Cwt. V	22,355 5,20,129	10,412 4,40,652	16,366 6,29,390	24,693 7,15,870	18,012 3,88,299
Sheets	... Cwt. V	2,502 87,819	2,215 90,549	2,700 1,26,992	2,001 1,08,055	2,368 92,723
Tubes	... Cwt. V	4,303 1,70,174	4,588 1,89,721	3,935 2,21,211	4,387 2,10,453	2,088 1,09,482
Wire	... Cwt. V	7,776 2,85,63	6,599 2,10,782	7,380 3,73,292	7,135 3,03,003	6,512 2,58,704
Wood Screws	... Cwt. V	... ...	1,078 1,30,818	2,496 2,53,916	2,850 2,65,971	2,264 1,82,885
Other Sorts	... Cwt. V	42,098 15,76,833	31,744 13,53,000	24,393 14,26,646	23,493 11,17,859	22,473 11,11,110
Copper Ore	... Cwt. V	5,020 1,15,990	1,991 51,419	2,998 82,043	15,423 4,32,700	12,428 3,57,893
Unwrought	... Cwt. V	33,925 8,73,876	18,057 5,85,932	47,701 20,09,496	51,687 17,39,239	43,292 17,96,497
Other Sorts	... Cwt. V	2,018 52,180	20 480	105 4,950	5 223	3 179
Wrought :—						
Rods	... Cwt. V	72,293 19,06,111	71,914 21,39,491	76,623 32,52,827	42,590 14,38,907	90,086 37,27,995
Sheets	... Cwt. V	2,79,953 77,83,631	1,01,895 41,44,739	1,62,126 70,81,972	36,832 14,28,489	77,306 38,36,469
Tubes	... Cwt. V	4,762 1,97,937	3,809 1,73,281	4,328 2,55,084	4,168 2,07,674	4,927 2,73,201
Wire	... Cwt. V	8,080 2,64,056	9,601 3,31,571	11,520 5,81,732	9,737 4,19,654	9,657 4,89,535
Other Manu- factures	... Cwt. V	10,316 4,91,209	11,245 6,13,126	10,672 7,11,385	8,051 4,06,476	5,741 3,83,356
Copper (excluding ore)	Cwt. V	4,16,561 1,16,92,125	2,21,426 80,50,221	3,16,063 1,39,70,489	1,68,685 61,41,088	2,43,420 1,08,65,635
Ferro alloys	Tons V	3,054 7,57,093	1,238 2,84,578	3,092 7,49,006	4,166 9,79,163	4,793 13,78,448
German Silver (including nickel silver)	Cwt. V	27,371 15,83,213	27,309 14,19,017	21,419 14,47,105	34,975 16,42,100	27,278 10,69,591
Iron Ore	Tons V	69 4,171	6 876	8 1,014	54 9,393	4 336
Pig Iron	Tons V	1,730 1,31,182	1,587 1,27,575	1,859 2,03,370	2,778 8,43,843	1,606 1,77,430
Steel	Tons V	92,233 97,81,921	77,913 80,71,656	90,795 1,49,72,751	44,885 78,63,708	73,896 94,14,680

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
20,168 14,88,647	18,176 14,16,106	10,386 7,55,000	5,288 4,12,707	20,27 1,75,902	22,414 12,49,839	21,236 10,43,677
1,530 1,06,553	2,240 1,54,603	598 43,455	116 11,405	266 24,083	28,501 26,09,450	11,411 9,56,528
1,669 1,65,580	2,334 2,42,170	1,964 2,36,259	741 93,290	1,129 1,42,087	2,572 3,21,773	5,116 5,78,558
7,344 4,74,510	5,972 5,20,673	2,671 2,95,261	1,475 1,58,117	1,152 1,10,710	2,352 2,78,031	2,252 2,45,849
1,261 2,13,990	1,590 310,682	103 90,377	375 81,831	639 1,33,174	2,827 2,89,288	1,075 3,68,975
25,737 14,56,666	32,001 21,09,435	14,822 11,91,745	5,250 6,36,245	3,544 6,34,888	22,189 14,79,071	229,990 1,14,42,424
13,754 5,31,979	6,001 2,65,902	5,842 2,40,295	81 7,437	479 40,821	2,783 1,28,252	73,707 35,58,515
63,488 26,28,437	115,688 53,16,282	32,076 13,19,517	208 12,001	...	1,07,167 16,63,336	242,136 1,44,97,654
...	12,971 5,06,167	1,17,322 45,90,525	66,316 20,28,614	...	...	18,004 9,66,550
82,332 40,06,169	1,55,924 86,05,396	1,78,162 90,90,322	2,41,680 1,23,49,227	2,90,198 1,50,17,597	55,385 27,59,416	1,72,05 1,47,16
31,667 20,43,658	29,335 19,02,135	7,532 5,13,640	147 14,813	836 82,225	53,845 41,04,920	1,49,534 1,22,83,495
5,029 5,96,633	7,000 7,43,433	1,007 1,20,830	458 58,735	1,499 1,68,006	1,734 1,93,688	2,611 4,12,954
9,786 7,22,763	9,616 7,76,093	2,733 1,85,869	76 10,977	161 23,267	1,401 1,36,757	3,386 2,58,464
45,872 20,07,928	6,306 4,90,756	5,894 5,22,078	10,109 4,92,702	67,101 30,09,618	85,045 28,40,907	2,18,271 1,12,57,550
2,52,578 1,25,48,146	3,43,406 1,88,05,514	3,50,658 1,66,01,076	3,19,078 1,55,74,536	3,60,364 1,83,50,624	3,07,455 1,59,17,271	7,10,319 4,83,30,347
3,054 19,32,452	4,153 23,57,550	2,967 24,04,059	1,589 14,15,864	3,740 24,75,725	3,577 23,04,118	1,750 9,40,713
15,317 5,03,432	10,141 3,90,017	100 3,000	...	2 387	17 2,146	14,691 11,21,577
1 131	...	...	12 3,913	...	...	54 18,951
660 83,850	536 1,10,999	100 22,445	...	...	...	71
21,030 46,63,766	9,823 34,31,224	1,192 9,40,249	20,905 44,15,459	57,048 75,96,188	73,310 1,60,79,554	10,015 66,28,806

Articles.		1935-36	1936-37	1937-38	1938-39	1939-40
*Anchors & Cables	Tons V	739 3,60,157	833 3,73,684	956 4,34,979	1,080 5,41,812	732 3,71,788
Beams, Channels, Pillars, Girders & Bridge-work	Tons V	28,687 31,20,257	24,876 29,58,750	26,878 40,66,168	18,708 30,59,623	9,900 16,03,867
Bolts & Nuts	Tons V	12,580 31,91,647	9,404 23,45,882	10,550 35,06,614	8,817 31,65,855	5,693 21,96,487
Fencing materials (including fencing wire)	Tons V	8,821 18,10,467	7,801 15,21,135	4,334 12,31,202	4,115 12,34,432	5,099 13,69,229
Hoops & Strips	Tons V	46,921 57,08,288	41,204 53,88,745	48,501 55,71,149	24,412 48,54,960	33,166 73,22,199
Nails, Rivets & Washers (exclu- ding wire nails)	Tons V	15,942 40,02,686	12,312 32,45,672	15,297 45,62,686	11,170 34,35,198	8,878 37,84,477
Pipes & fittings, Cast	Tons V	1,357 6,80,184	1,420 6,64,296	1,426 7,02,484	2,546 8,95,728	2,488 8,52,669
Rails, chairs and Fish plates (in- cluding) these for railways)	Tons V	7,853 7,84,632	9,987 10,11,972	7,471 11,10,099	11,409 14,72,993	9,975 11,48,399
Wood-Screws (iron)	Tons V	2,272 10,07,860	1,874 8,30,842	2,834 15,66,202	2,526 12,59,982	1,809 9,40,592
Metal Thread Screws	Tons V	61 29,492	23 9,213	39 19,526	32 29,265	74 35,604
Sheets and Plates	Tons V	11,70,95 1,98,68,052	92,539 1,51,65,733	74,082 1,72,74,603	65,721 1,59,50,230	36,682 96,26,217
Tubes, Pipes and fittings, wrought	Tons V	62,119 1,11,81,233	40,358 79,54,419	41,356 1,07,02,189	34,277 1,03,77,291	32,523 1,01,02,547
Wire Nails	Tons V	15,274 21,95,156	8,025 12,50,772	6,234 15,18,230	4,944 10,91,519	5,591 1,34,27,96
Wire Rope	Tons V	1,126 511,517	940 4,94,794	1,183 6,75,635	804 5,44,114	1,011 7,00,626
Wire other than fencing wire	Tons V	9,583 15,71,450	8,628 14,11,191	8,471 21,79,719	9,186 23,68,811	10,057 25,31,282
Lead UNWROUGHT ore	Tons V	154 46,039	350 1,35,293	164 8,51,26	372 1,57,573	168 74,941
Unwrought Pig	Cwt V	2,121 2,31,75	817 9,027	1,24,218 20,38,349	1,19,017 14,25,802	2,29,281 35,09,942
Other sorts	Cwt V	868 5,086	1,959 11,193	3,065 47,014	3,168 28,120	622 5,055

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
546 3,57,881	63 46,914	78 12,424	103 1,08,298	208 1,70,049	1,829 11,17,254	665 6,57,967
1,886 3,82,642	956 2,21,526	175 1,33,118	31 3,259	30 10,656	475 1,93,704	1,796 9,16,602
3,460 24,20,143	4,993 44,14,033	461 4,00,050	208 2,73,888	353 4,32,390	928 7,12,901	1,353 18,94,711
2,516 11,78,002	2,351 13,85,732	106 78,943	65 31,156	129 62,513	282 2,20,074	468 2,66,568
45,779 1,45,91,112	16,650 60,81,675	10,489 44,01,163	5,822 25,42,794	5,842 28,03,962	6,388 17,56,591	9,146 35,20,145
6,420 35,30,803	5,764 35,76,875	2,761 18,41,293	3,324 20,77,183	3,595 24,57,600	2,427 26,71,892	5,615 30,01,546
1,059 5,43,435	983 7,31,981	712 5,75,613	613 5,75,044	601 5,22,845	847 8,14,119	609 7,52,198
1,477 3,34,984	2,054 6,65,832	39 6,281	1,145 3,25,501	50 22,083	57,599 1,40,82,520	7,832 19,17,115
1,756 17,43,814	2,086 38,36,476	798 11,54,714	955 13,70,776	1,273 18,84,331	1,870 30,77,826	1,784 35,60,185
45 58,486	13 21,991	3 179	...	...	...	1 2,630
35,347 1,21,06,406	26,627 1,03,63,909	14,917 64,01,053	998 3,71,009	7,034 20,50,877	6,027 21,22,940	4,392 19,32,262
30,841 1,34,65,799	32,687 1,53,24,469	6,086 45,41,447	2,136 25,40,345	3,223 25,05,458	5,409 44,25,283	7,985 71,41,620
6,607 25,34,096	4,174 20,55,957	1,316 6,43,515	2,966 12,90,426	6,865 26,83,630	2,313 9,40,348	1,806 10,34,768
670 5,72,471	717 7,84,836	545 6,85,800	474 5,62,978	4,571 52,71,642	5,724 66,32,656	1,819 19,46,251
11,983 45,42,626	7,671 40,57,635	3,337 20,07,443	1,693 9,53,042	5,847 25,56,635	6,966 36,11,682	3,745 21,75,821
76 42,808	262 1,33,359	144 78,282	67 37,025	43 25,074	24 17,917	455 3,76,662
2,57,018 45,98,000	3,17,571 61,11,507	3,193 62,124	8 232	8,000 1,02,693	1,48,057 30,52,511	1,17,471 38,24,656
2,478 50,418	452 8,172	7,000 2,10,000	1 112	19 108	488 14,100	5,898 2,10,426

Articles		1935-36	1936-37	1937-38	1938-39	1939-44
WROUGHT Pipes and Tubes	Cwt V	10,205 2,82,613	10,275 2,44,514	14,163 4,42,286	10,727 2,27,473	9,191 2,20,148
Sheets	Cwt V	10,069 1,32,374	9,722 1,57,578	9,576 1,93,997	11,823 1,72,972	9,839 1,55,148
Sheets for tea chests	Cwt V	190 2,871	412 8,780	36 551	...	28 490
Other sorts	Cwt V	4,068 1,17,635	2,733 99,576	4,880 1,64,835	4,730 1,79,188	5,859 1,74,391
Solder	Cwt V	4,314 3,87,960	5,018 4,26,012	4,276 4,18,405	4,226 3,34,706	2,710 2,51,384
Tin UNWROUGHT (blocks, ingots bars, and slabs)	Cwt V	52,501 77,00,313	42,703 59,18,835	53,133 85,09,458	53,991 69,94,166	74,471 1,20,42,552
WROUGHT Sin foils	Cwt V	51 9,822	22 49,554	14 2,238	8 1,572	9 4,198
Other Sorts	Cwt	455 69,210	146 26,126	1,998 35,900	2,047 69,913	1,116 88,427
Total of Zinc or Spelter	Cwt V	4,86,715 51,90,429	4,75,111 53,38,900	4,40,857 76,80,926	5,22,667 56,36,082	4,50,970 58,27,402
Umbrella & Umbrella Fittings	V	25,77,577	16,58,273	25,10,600	12,06,993	16,01,017
Vehicles other than locomotives for Railways Cycles	No. V	1,33,595 39,06,312	1,65,390 47,48,362	1,70,661 55,74,661	1,38,036 48,19,368	92,210 33,29,100
Parts of Cycles & Accessories excluding rubber tyres	V	70,63,055	64,93,510	62,79,646	47,89,335	41,04,975
Air Craft	No. V	20 3,51,264	33 7,07,311	65 31,58,708	20 4,24,633	25 6,00,926
Parts of air-craft	V	5,49,480	8,82,357	11,13,409	17,83,152	15,71,099
Carriages and parts for railways	V	65,57,928	48,78,425	63,72,940	70,29,034	41,11,743
Wagons & parts for railways	V	43,37,996	15,46,043	36,17,410	33,35,350	22,09,386
Motor Cars (including Taxi Cabs)	No. V	13,590 2,51,28,444	12,939 2,42,93,148	15,097 2,68,24,513	10,088 2,17,08,276	9,065 2,06,73,588
Motor Cycles including scooters	No. V	734 3,27,539	921 3,50,837	1,271 4,07,691	1,371 4,46,067	1,026 3,49,435

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
11,544 3,50,110	6,791 2,20,271	1,628 2,47,418	1,052 89,462	116 11,645	569 65,539	311 40,091
12,825 3,14,382	14,164 3,88,782	7,171 1,64,965	4,760 1,12,805	725 10,972	7,663 2,00,189	1,545 57,423
1,226 42,024	1,581 51,952	1,737 74,198	1,725 71,120	... ...	2 46	1 42
5,916 2,48,847	8,595 1,41,977	15,232 8,50,418	2,091 1,74,950	2,836 1,03,702	2,86,404 65,86,654	7,307 2,28,827
2,196 2,34,996	731 92,228	239 21,04	113 14,072	349 54,181	576 75,919	1,971 3,02,293
48,824 88,22,962	79,299 1,50,33,591	299 76,082	198 43,776	... ...	2,803 5,95,105	15,457 39,15,486
39 4,380	229 53,824	11 5,254	... ...	... 9	... ...	... 206
14,414 3,73,125	838 68,967	34 13,691	... 91	1,297 17,365	4 818	5,486 13,32,368
4,43,605 95,78,662	3,05,748 99,91,180	2,23,353 72,10,876	33,412 8,79,527	23,873 10,85,594	1,97,271 51,51,221	10,65,067 3,55,53,720
19,59,888	7,60,180	85,385	5,449	18,090	10,01,427	39,57,803
50,222 22,19,179	54,455 26,90,618	16,134 9,73,595	28,355 18,82,365	37,391 25,15,713	76,141 54,77,205	2,12,554 1,80,87,896
30,14,946	31,53,804	17,29,929	21,16,730	29,44,265	53,98,334	97,21,074
23 6,73,120	12 11,05,942	2 8,512	2 21,161	2 85,115	1 2,000	2 19,13,145
11,94,337	2,44,73,183	10,25,068	15,08,232	11,19,011	19,24,975	40,84,944
26,94,003	16,66,520	9,75,067	8,77,254	35,06,328	1,75,21,730	68,71,226
10,61,270	1,29,215	2,09,211	63,980	2,50,412	1,42,99,378	2,78,05,707
5,058 1,14,80,437	2,854 70,54,930	381 11,42,673	41 1,04,102	12 50,929	263 10,09,940	10,667 4,39,09,193
362 1,77,531	471 1,66,514	62 25,871	3 2,302	61 46,685	600 4,64,171	3,070 31,59,824

Articles.		1935-36	1936-37	1937-38	1938-39	1939-40
Motor omnibuses, motor vans and motor lorries	No. V	248 8,50,203	340 13,10,000	243 5,33,174	283 6,05,097	577 15,16,527
Chassiss	No. V	8,222 1,11,38,818	8,820 1,17,95,790	14,834 2,01,51,361	7,577 1,12,96,378	13,960 1,89,02,700
Train	No. V	2 10,118	...	...	...	...
Parts of Mechanically propelled vehicles & accessories other than of air craft (excluding rubber Tyres)	V	74,51,424	74,04,003	1,02,05,219	83,12,920	1,03,40,893
Total of Mechanically propelled vehicles (excluding railway locomotives & Tractors)	V	5,67,03,214	5,31,68,972	7,51,24,425	5,54,40,907	6,02,76,877
Ships, parts of (including launches & boats)	V	5,97,029	3,80,530	6,57,992	10,31,790	1,30,938

POTTERY MACHINES, PAINT MACHINES.
CLAY WORKING MACHINES,
REFRACTORY MACHINES.

—: MAKERS :—

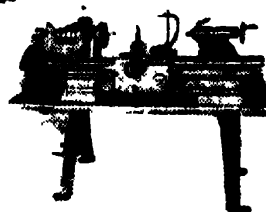
Kusum Engineering Co., Ltd.

25, SWALLOW LANE, CALCUTTA-1.

1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47
1,061 18,80,964	854 13,97,671	61 2,31,462	13 58,037	1 5,000	106 41,83,284	550 20,61,887
18,578 3,20,86,156	28,001 5,33,87,765	6,758 2,04,02,417	56 1,25,515	7,736 2,06,04,774	359 12,13,338	8,090 3,01,78,148
...	...	...	...	...	...	...
1,00,96,889	3,47,69,185	3,00,67,160	57,93,146	59,83,958	68,38,980	1,26,93,565
0,22,53,757	12,41,48,875	5,40,83,730	85,53,729	8,76,52,212	4,80,57,796	13,40,31,303
1,88,085	1,29,245	59,068	70,027	63,493	3,57,360	9,45,253

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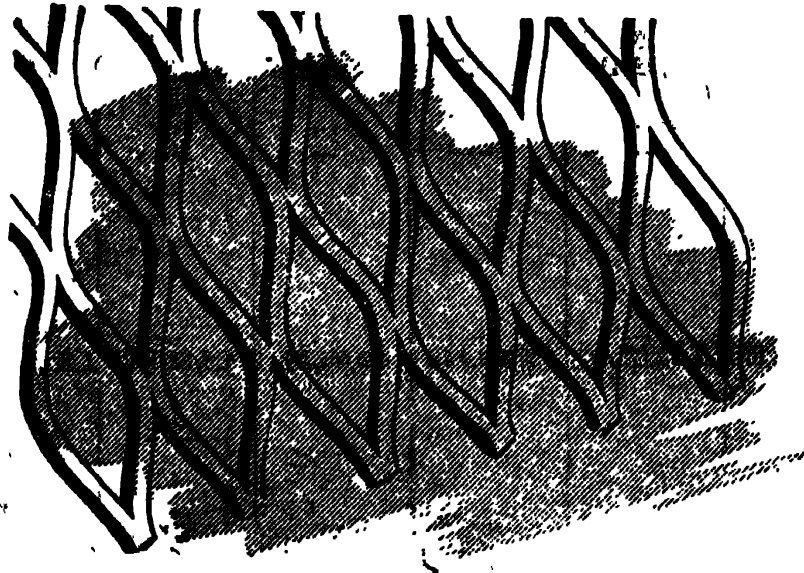


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| 3. Polished Mild Steel Shafting. | 17. Copper Pipe. |
| 4. Gun Metal Bush Bearing
Plummer Blocks. | 18. Brass Rod. |
| 5. Cast Iron Hangers &
Brackets. | 19. M. S. Hoop Iron. |
| 6. W. I. and C. I. Split Pulleys. | 20. Galvd. Wire and Wire Nails. |
| 7. C. I. Rope Pulleys. | 21. Chain & Pulley Blocks. |
| 8. Belting (Hair, Rubber &
Leather). | 22. Wire and Manilla Rope. |
| 9. Mild Steel Chimneys. | 23. Spring Steel (Round & Flat.) |
| 10. Pipes and Fittings. (S. & L.) | 24. Wire Netting and Fencing
materials (for TEA GARDENS) |
| 11. G. M. Valves & Cocks. | 25. Llyods Tested Chains. |
| 12. Small Tools (Files, Twist
Drills, Hacksaw Blades,
Taps Etc. | 26. Carbon Tool Steel (Round
and Flat)) |
| 13. Iron & Brass Screws
(Nettlefolds) | 27. Galvd. Overhead Line equip-
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and Telephone Companies
& Telegraph Dept. |
| 14. Asbestos Packing. | 28. Roller Chain for industrial
Purpose. |
-

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SUPPLY CO., TEA ESTATES, JUTE, COTTON,
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A LIST

**of machine tools manufactured in Japan and
some of the firms manufacturing them.**

Borer

Diada Kikai Seisakusho Co., Ltd., Hoshizaki-cho Minami-ku
Nagoya-shi.

Iitano Seiki Co., Ltd., Mitesima-machi Nisiyodogawa-ku,
Osaka.

Kariya Koki Co., Ltd., Oazusigehara Kariya-cho Hekikai-gun
Aichi-ken.

Broaching Machine

Fujikoshi Kazai Kogyo Co., Ltd., Ishigane Toya, a-shi.

Sibaura Koki Co., Ltd., Asatakenohana Ookat Namazu-shi.

Die Sinker

Sibaura Koki Co., Ltd., Abeshi-cho-Ebe-gun, Ilyogo.

Drill

Aikawa Chuzo Tokkasho Co., Ltd., Yunoki Shizuoka-shi.

Chiyoda Seiki Co., Ltd., Kojiya-machi Ota-ku, Tokyo.

Kariya Koki Co., Ltd., Oazusigehara Kariya-cho Hekikai-gun,
Aichi-ken.

Engraving Machines

Fukuhara Sangyo Boeki Co., Ltd., Honojo-mura, Buko-gun
Hyogo-ken.

Gear Cutter

Hamai Sangiyo Co., Ltd., Osakihon-machi Shinagawa-ku,
Tokyo.

Kashifuji Takkosha Co., Ltd., Kamitoba-kamota Simokya-ku,
Kyoto.

Okamoto Kosamukikai Seisakusho Co., Ltd., Minowa-machi
Koboku-ku, Yokohama.

Grinder

Akiokukikai Seisakusho Co., Ltd., Yozan Nosaito-shi Akita.

Iitachi Kosakuk, Abiko-machi Chiba-ken.

Mikuro Seisakusho Co., Ltd., Onoguchi-mura Hemana-gun
Shizuoka-ken.

Grinder (*Contd.*)

Mikuro Seisakusho Co., Ltd., Onoshim-machi Tamura-gun
Fujushima.

Toyo Kogyo Co., Ltd., Futyu-machi Akigun Hiroshima-ken. •

Lathe

Akiokukikai Seisakusho Co., Ltd., Yozan Noshito shi Akita.

Diada Kikai Seisakusho Co., Ltd., Hoshizaki-cho Minami-ku
Nagoya-shi.

Daiko Dikai Seisakusho Co., Ltd., Kamino-mura, Kako-gun
Hyogo-ken.

Hitachi Kosakuk, Abiko-machi Chiba-ken.

Osaka Kikai Seisakusho Co., Ltd., Nisisin-machi Nagaoka-shi
Niigata.

Osaka Kikai Seisakusho Co., Ltd., Tsukuda-machi
Nishiyadogawa-ku Osaka.

Osaka Kiko Co., Ltd., Kita-mura Itami-shi.

Saga Seisakusho Co., Ltd., Higasashisinagawa Sinagawa-ku,
Tokyo.

Saga Seisakusho Co., Ltd., Kaminoyama-machi Minami-
murayama-gun Yamagata.

Miller

Daiko Kikai Seisakusho Co., Ltd., Kamino mura, Kako-gun
Hyogo-ken.

Osaka Kikai Seisakusho Co., Ltd., Ohiraki-cho Fukushima-ku,
Osaka.

Osaka Kikai Seisakusho Co., Ltd., Tsukuda-machi Nishiya-
dogawa-ku Osaka.

Waishino Seiki Shoji Co., Ltd., Narumi-cho Aichi-gun Aichi-ken.

Planer

Azuma Kigyo Co., Ltd., Azuma-cho Shimizu-shi.

Kubota Tekkosha Co., Ltd., Nishiarasinkai Amagasaki-shi,
Hyogo-ken.

Suzuki Seisakusho Co., Ltd., Terajima-machi Sunida-ku, Tokyo.

Sekisan Seiko Co., Ltd., Owadacho Nishiyodo-ku Osaka

Saw

Konan Kozai Kogyo Seisakusho, Hanyama-mura Buko-gun
Hyogo-ken.

Kamatsu Seisakusho Co., Ltd., Yokaichi-machi Kamatsu-shi,
Ishikawa-ken.

Shaper

- Aikawa Chuzo Tekkasho Co., Ltd., Yunoki Shizuoka-shi.
- Mimassu Seisakusho Co., Ltd., Tamaru-machi Doai-gun Mic-ken.
- Osaka Seisazaki Co., Ltd., Shimohozumi Kasugamura Mishima-gun, Osaka.
- Toyo Kogyo Co., Ltd., Oaza-shigefuku Yokkaichi-shi Mie Ken.

Slatter

- Taka Seisakusho Co., Ltd., Honda Takaragizuka Katsushika-ku Tokyo.

Thread Roller

- Tsugami Seisakusho Co., Ltd., Nagakome cho Minamiusaku-gun, Nagono-ken.

MACHINE TOOLS PRODUCED IN CANADA

Bending and Straightening Machines

- The John Bertram & Sons Company Ltd., Dundas, Ont. Canada.
- Hydraulic Machinery Co., Ltd., 1972, Tansley St., Montreal, Que. Canada.
- Standard Machine & Tool Co., Ltd., 870, Ottawa St., Windsor, Ont. Canada.

Boring Machines (Vertical and Horizontal)

- The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.
- Canada Machinery Corporation Ltd., Galt, Ont. Canada.
- Standard Machine & Tool Co., Ltd., 870, Ottawa St., Windsor, Ont. Canada.

Boring Mills

- The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.

Bulldozers

- Canada Machinery Corporation Ltd., Galt, Ont. Canada.
- The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.

Clamps

- The John Bertram & Sons Co. Ltd., Dundas, Ont. Canada.

Die Casting Machines

Modern Tool Works Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Draw Benches

The Bawden Machine Co., Ltd., 163, Sterling Road, Toronto 3,
Ont. Canada.

Hydraulic Machinery Co., Ltd., 1972, Tansley Street, Montreal,
Que. Canada.

Drilling Machines

The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Canada.

Standard Machine & Tool Co., Ltd., 870, Ottawa Street,
Windsor, Ont. Canada.

Modern Tool Works Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Grinding Machines

The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.

Pollard Manfg. Co., Ltd., Niagara Falls, Ont. Canada.

Modern Tool Works Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Standard Machine & Tool Co., Ltd., 870, Ottawa Street,
Windsor, Ont. Canada.

The Ford-Smith Machine Co., Ltd., Hamilton, Ont. Canada.

Hydraulic Equipment

Hydraulic Machinery Co., Ltd., 1972, Tansley Street, Montreal,
Que. Canada.

Williams Tool Corporation of Canada Ltd., Brantford,
Ont. Canada.

Canada Iron Foundries Ltd., 921, Sun Life Buildings, Montreal,
Que. Canada.

Injection Moulding Machines

The Bawden Machine Co., Ltd., 163, Sterling Road, Toronto 3,
Ont. Canada.

Injection Moulding Machines (Contd.)

Hydraulic Machinery Co , Ltd , 1972, Tansley Street, Montreal,
Que. Canada.

Modern Tool Works Ltd , 69, Montcalm Avenue, Toronto 10,
Ont Canada.

**Lathes (Railway Motive power Shop and Rolling
Stock Tools)**

The John Bertram & Sons Co , Ltd , Dundas, Ont. Canada.

Canada Machinery Corporation Ltd , Galt, Ont. Canada.

**Lathes (Heavy Industry Types for Railway, Marine,
Mining, Heavy Ordnance, etc.)**

The John Bertram & Sons Co , Ltd , Dundas, Ont Canada.

Canada Machinery Corporation Ltd , Galt, Ont. Canada

The R McDougall Co , Ltd , Galt, Ont Canada

John T. Hepburn Ltd , 18, Van Horne Street, Toronto 4,
Ont Canada.

Williams Tool Corporation of Canada Ltd , Brantford,
Ont Canada.

**Lathes (Medium and Light Type Engine Lathes for
General Manufacturing) (Tool Room Lathes)**

The John Bertram & Sons Co , Ltd , Dundas, Ont Canada

Canada Machinery Corporation Ltd , Galt, Ont Canada.

John T Hepburn Ltd , 18, Van Horne Street, Toronto 4,
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The R McDougall Co., Ltd , Galt, Ont Canada

Williams Tool Corporation of Canada Ltd., Brantford,
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Lathes, Metal Spinning

John T Hepburn Ltd., 18, Van Horne Street, Toronto 4,
Ont. Canada.

Modern Tool Works Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Milling Machines

Modern Tool Works Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Williams Tool Corporation of Canada Ltd., Brantford,
Ont. Canada.

The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.

Standard Machine & Tool Co., Ltd., 870, Ottawa Street,
Windsor, Ont. Canada.

Milling Machine Accessories

Modern Tool Works, Ltd., 69, Montcalm Avenue, Toronto 10,
Ont. Canada.

Planers

The John Bertram & Sons Co., Ltd., Dundas, Ont. Canada.,

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Pollard Manfg. Co., Ltd., Niagara Falls, Ont. Canada.

Presses (Hydraulic)

Canada Iron Foundries Ltd , 921, Sun Life Building, Montreal,
Que. Canada.

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Hydraulic Machinery Co., Ltd., 1972, Tansley Street, Montreal,
Que. Canada.

The John Bertram & Sons Co., Ltd , Dundas, Ont. Canada.

The Bawden Machine Co., Ltd., 163, Sterling Road, Toronto 3,
Ont. Canada.

Presses (Mechanical Power Presses)

The Bawden Machine Co., Ltd., 163, Sterling Road, Toronto 3,
Ont. Canada.

Brown Boggs Foundry & Machine Co., Ltd., Hamilton,
Ont. Canada.

Canada Iron Foundries Ltd., 921, Sun Life Building, Montreal,
Que. Canada.

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Hydraulic Machinery Co., Ltd., 1972, Tansley Street, Montreal,
Que. Canada.

Punching and Shearing Machinery

The John Bertram & Sons Co , Ltd., Dundas, Ont. Canada.

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Brown Boggs Foundry and Machine Co., Ltd., Hamilton, Ont. Canada.

Stamping Machines

The John Bertram & Sons Co , Ltd , Dundas, Ont. Canada.

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Slotting Machines

The John Bertram & Sons Co., Ltd , Dundas, Ont. Canada.

Canada Iron Foundries Ltd., 921, Sun Life Building, Montreal, Que. Canada.

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Threading Machines

Williams Tools Corporation of Canada Ltd., Brantford, Ont. Canada.

Threading or Screwing Machines

Canada Machinery Corporation Ltd., Galt, Ont. Canada.

Williams Tools Corporation of Canada Ltd , Brantford, Ont. Canada.

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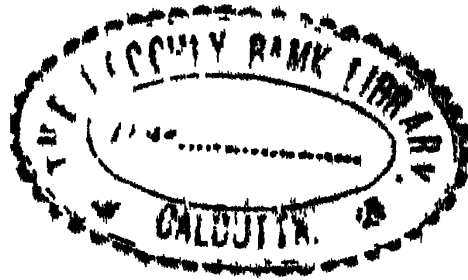
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(Automotive-cars, lifts, winches for charging apparatus).

Blast furnaces and accessories

Special steel work equipment

Equipment for dolomite and Thomas slag shop.
Fixed or tipping mixers, converters.
Hot rolling mills and accessories.
Sheet trains, universal trains.
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Special equipments for non-ferrous metal metallurgy

Ingot moulds.
Hot rolling mills, flat wire rolling mills.
Cold rolling mills for sheets, bands, strips.
Various apparatus and accessory machines.
Secondary machines (winding, unrolling machines).
Cold rolling special equipments.

Special steel tube manufacturing equipments

Tube rolling mills, boring rolling mills.
Calibraters, straighteners.
Conveyors, manipulators, mandrel withdrawers.
Special machines for manufacturing lap or butt welded tubes.

Mechanical Foundry Equipment

Melting equipment (cupolas, ladles, furnaces, converters).
Pig breakers of any type.
Sand conditioning equipment (crushers, rubbing apparatus, mixers, sifters, dividers).

Mechanical Foundry Equipment—Contd.

- Sand storing and distributing apparatus.
- Moulding and coring machines of any type.
- * Special foundry handling apparatus.
- Cleaning and various equipment.
- Sand blast and scouring apparatus (sand blast machines, cabins, drums, rotating tables, tunnels, turbine equipment, filters, suckers, cyclones).
- Combine plants.

LIST OF SOME LEADING ENGINEERING MANUFACTURING FIRMS IN AUSTRALIA.

Machine Tools

- Morison & Bearby Pty. Ltd., Carrington, New Castle, N. S. W.
- Metalcraft Engineering Co., 79, Brougham Street, East Sydney, N. S. W.
- Mopperson's Pty. Ltd., 546, Collins Street, Melbourne, Victoria.
- Nuttall Engineering, 7, Primrose Avenue, Rosebery, N. S. W.
- Welded Products Ltd., O'Riordan Street, Alexandria, N. S. W.

Mechanical Engineering

- Gibson, Battle & Co., Pty. Ltd., 84, William Street, Melbourne, Vic.
- R. Werner & Co., Pty. Ltd., 80, Burnley Street, Richmond, Victoria.
- Cooper Engineering Co., Pty. Ltd., Coward Street, Mascot, N. S. W.
- Cameron & Sutherland Pty. Ltd., Riverside Avenue, South Melbourne.
- Noyes Bros. (Sydney) Ltd., 115, Clarence Street, Sydney.
- Australian Machinery Co., Pty. Ltd., 371, Adelaide Street, Brisbane.

Mining Machinery & Engineering

- Austral Otis Engineering Co., Ltd., 63-95, Hanna Street, South Melbourne.
- Clyde Engineering Co., Ltd., Clyde Works, Granville, N.S.W.
- Hadfields Steel Works Ltd., Mitchell Road, Alexandria, N.S.W.
- Malcolm Moore Ltd., Williamstown Road, Port Melbourne, Victoria.
- Walkers, Ltd., Bowen and Kent Streets, Maryborough, Queensland.

Electrical Engineering

G. M. F. Electric Motors Pty. Ltd., 90, Layton Street,
Compdown, N.S.W.

Gerard Industries Ltd., Park Terrace, Bowden, South Australia.

McColl Electric Works, Pty. Ltd., 112, Moor Street, Fitzroy,
Victoria.

Precision Engineering Co., Pty. Ltd., Neild Avenue, Rushcutters
Bay, Sydney, N. S. W.

Tamlinson & Co., Ltd., 125, Rose Terrace Wayville West, South
Australia.

Refrigerating Machinery & Engineering

James Bell Machinery Pty. Ltd., 200, King Street, Melbourne,
Victoria.

James Budge Pty. Ltd., McEvoy Street, Alexandria, Sydney,
N. S. W.

Iron Foundries

The Broken Hill Proprietary Co., Ltd., 422, Little Collins Street,
Melbourne.

United Engineering & Malleable Co., Pty. Ltd., Gordon Street,
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LIST OF SOME BRITISH MANUFACTURERS OF ENGINEERING GOODS.

Air Conditioning plant (Automatic).

Crittall, Richard & Company Ltd., 156, Great Portland Street,
London, W. I.

Crowthorn Engineering Co., Ltd., The Atlas Works, Reddish,
Stockport.

Hall, J. & E., Ltd., Dartford, Kent.

Stone, J. & Co., Ltd., Deptford London, S. E. 14.

Bakelite plant & Machinery.

Berry, Henry, & Co., Ltd. Croydon Works, Leeds 10.

Carter, J. Harrison Ltd., Dunstable.

Shaw, Francis & Co., Ltd., Corbett Street, Ashton New Road,
Manchester 11.

Shaw, John & Sons (Salford) Ltd., Wellington Works,
St. Stephen Street, Salford 3.

Bearings, Ball.

Hoffmann Manufacturing Co., Ltd., The Chelmsford, Essex.
Pollard Bearings Ltd, Bearing Works, Tyburn Road,
* Birmingham 24.

Ransome & Marles Bearing Co., Ltd., Stanley Works,
Newark-on-Trent.

Skefko Ball Bearing Co., Ltd, The, Leagrave Road, Luton, Beds.

Belt Making Machinery (Rubber, Balata).

Shaw, Francis & Co., Ltd., Corbett Street, Ashton New Road,
Manchester 11.

Bending and Straightening Machines.

Berry, Henry & Co, Ltd., Croydon Works, Leeds 10.

Bigwood, Joshua & Son Ltd, Wednesfield Road,
Wolverhampton.

Greenwood & Batloy Ltd., Albion Works, Leeds.

Miracle Mills Ltd., 90, Lots Road, London, S. W. 10.

Smith, Hugh & Co., (Possil) Ltd., Possil Engine Works,
Glasgow, Scotland.

Blast Furnace plant.

Ashport, Benson, Pease & Co., Ltd., Parkfield Works,
Stockton-on-Tees.

General Electric Co., Ltd., The Magnet House, Kingsway,
London, W. C. 2.

Marshall, Sons & Company Ltd., Britannia Works, Gainsborough,
Lincs., and Stafford House, Norfolk Street, Strand, W. C. 2.

Oxley Engineering Co., Ltd., Clarence Road, Leeds 10.

Thorton, B., Limited, Huddersfield, Yorks.

Boilers, Automatically Oil-Fired

Constructional Engineering Co., Ltd., The Titan Works,
Birmingham 12.

Farrar Boilerworks Ltd., North Gate, Newark-on-Trent.

Boilers, Electric

Avonling-Barford Ltd., Grantham.

Constructional Engineering Co., Ltd., The, Titan Works,

General Electric Co., Ltd., The, Magnet House, Kingsway,
London, W. C. 2.

Boilers, Gas Fired

Babcock & Wilcox Ltd., Babcock House, Farringdon Street,
London, E. C. 4.

Constructional Engineering Co., Ltd., The Titan Works,
Birmingham 12.

Towler & Son Ltd., Riverbank Works, Sugar House Lane,
Stratford, London, E. 15.

Boilers, Locomotive

Marshall Sons & Company Ltd., Britannia Works, Gainsborough,
Lincs., and Stafford House, Norfolk Street, Strand, W. C. 2.

Robey & Co., Ltd., Globe Works, Lincoln.

Yorkshire Engine Co., Ltd., Meadow Hall Works, Wincobank,
Sheffield.

Boilers, Steam and Hot Water

Aveling-Barford Ltd., Grantham.

Cochran & Co., Annan Ltd., Annan, Scotland.

Foster, Yates & Thom Ltd., Blackburn.

Bolt Heading Machines

Greenwood & Batley Ltd., Albrion Works, Leeds.

Bolt, Nut and Rivet Forging Machines

Greenwood & Batley Ltd., Albion Works, Leeds.

Bolt Screwing Machines

Heap, Joshua & Co., Ltd., Oldham Road Engineers' Tool
Works, Ashton-under-Lyne.

Winn, Charles & Co., Ltd., Granville Street, Birmingham, 1.

Cable-making Machinery, Electric

Bridge, David & Co., Ltd., Castleton Iron Works, Castleton,
Manchester.

Carter, B. & F. & Co., Ltd., Albion Works, Bolton, Lancs.

General Engineering Co., (Radcliffe) Ltd., Station Works, Bury
Road, Radcliffe, Lancs.

Hanson & Edwards Ltd., Vernon Street Works, Warrington.

Shaw, Francis & Co., Ltd., Corbett Street, Ashton New Road,
Manchester 11.

Cable and Wire Coiling and Reeling Machines, Electric

Carter, B. & F. & Co., Ltd., Albion Works, Bolton, Lancs.

Cable Splicing Machines

Heenan & Froude Ltd., Worcester Engineering Works,
Worcester.

Chucks

Macrome Ltd., Aldersley, Wolverhampton.

Pollard, Fredk & Co., Ltd., "Corona" Works, Leicester.

Pratt, F. & Co., Ltd., Halifax.

Conduits, steel

General Electric Co., Ltd., The, Magnet House, Kingsway,
London, W. C. 2.

Drawbenches, Tube and Bar

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Foster, Yates & Thom, Ltd., Blackburn.

Head, Wrightson & Co., Ltd., Teesdale Iron Works, Thornaby-on-Tees; Stockton Forge, Norton Road, Stockton-on-Tees.

Drilling Machines, Horizontal

Asquith, William, Ltd., Highroad Well Works, Halifax, Yorks.

Pollard, Fredk., & Co., Ltd., "Corona" Works, Leicester.

Drilling Machines, Multiple

Asquith, William, Ltd., Highroad Well Works, Halifax, Yorks.

Noble & Lund Ltd., Northern Machine Tool Works, Felling-on-Tyne, Gateshead 10.

Pollard, Fredk., & Co., Ltd., "Corona" Works, Leicester.

Drilling Machines, Special Purpose

Asquith, William Ltd., Highroad Well Works, Halifax, Yorks.

Pollard, Fredk., & Co., Ltd., "Corona" Works, Leicester.

Generating Sets, Electric, Portable

Coventry Climax Engines Ltd., Widdrington Road, Coventry.

Lister, R. A., & Co., Dursley, Gloucestershire.

Pelapone Engines Ltd., Lofthouse Gate, Wakefield.

Generators, Electric, Alternating Current

Brush Electrical Engineering Co., Ltd., The, Loughborough,
Leics.

General Electric Co., Ltd., The, Magnet House, Kingsway,
London, W.C.2.

Globe Engineering Co., Ltd., The, Huddersfield Road,
Brighouse.

Generators, Electric, Alternating Current—*Contd.*

Greenwood & Batley Ltd., Albion Works, Leeds.

Mawdsley's Ltd., Dursley, Glos.

Generators, Electric, Direct Current

Brush Electrical Engineering Co., Ltd., The, Loughborough, Leics.

General Electric, Co., Ltd., The, Magnet House, Kingsway, London, W.C.2.

Globe Engineering Co., Ltd., The, Huddersfield Road, Brighouse.

Insulating Machinery

Bertrams Ltd., St. Katherine's Works, Sciennes, Edinburgh, 9.

Carter, P. & F., & Co., Ltd., Albion Works, Bloton, Lancs.

Insulating Materials, Electric

Attwater & Sons Ltd., Hopwood Street Mills, Preston.

British Insulated Callender's Cables Ltd., Norfolk House, Norfolk Street, London, W.C.2.

General Electric Co., Ltd., The Magnet House, Kingsway, London, W. C. 2.

Jigs and Fixtures

Craven Bros. (Manchester) Ltd., Vauxhall Works, Reddish, Stockport.

Charnwood Engineering Co. Ltd., The, Abbey Lane, Leicester.

Foster, Yates & Thom, Ltd., Blackburn.

Harrison, T. S., & Sons Ltd., Union Machine Tool Works, Heckmondwike.

Lawrence W. A. D., Ltd., 516, 517 & 518, Ipswich Road, Slough, Bucks.

Mollart Engineering Co., Ltd., The Precision and Production Engineers, Kingston By-Pass Surbiton, Surrey.

Walters & Dobson Ltd., Bailey Street, Sheffield.

Lathes, Billet Turning

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Craven Bros. (Manchester) Ltd., Vauxhall Works, Reddish, Stockport.

Lathes, Boring and Surfacing

Craven Bros. (Manchester) Ltd., Vauxhall Works, Reddish, Stockport.

Noble & Lund Ltd., Northern Machine Tool Works, Felling-on-Tyne, Gateshead 10.

Lathes, Capstan

Murad Machine Tool Company Ltd., Stocklake, Aylesbury, Bucks.

Woodhouse & Mitchell Ltd., Wakefield Road, Brighouse, Yorks.

Lathes, Capstan, Automatic

Butterworth British Automatic Machine Tool Co., Ltd., Rochdale.

Lathes, Capstan and Turret

Woodhouse & Mitchell Ltd., Wakefield Road, Brighouse, Yorks.

Machine Tools, Special Purpose

Bertrams Ltd., St. Katherine's Works, Halifax, Yorks.

Chadburns (Liverpool) Ltd., Park Lane, Aintree, Liverpool, 10.

Craven Brothers (Manchester) Ltd., Vauxhall Works, Reddish, Stockport.

Holroyd, John, & Co., Ltd., Milnrow, Lancs, Eng.

Murad Machine Tool Co., Ltd., Stocklake, Aylesbury, Bucks.

Smith, Hugh, & Co. (Possil) Ltd., Possil Engine Works, Halifax, Yorks.

Ward, Thos. W., Ltd., Albion Works, Sheffield, England.

Woodhouse & Mitchell Ltd., Wakefield Road, Brighouse, Yorks.

Machines, Special Purpose, Design and Manufacture of

Asquith, William, Ltd., Highroad Well Works, Halifax, Yorks.

Bertrams Ltd., St. Katherine's Works, Sciennes, Edinburgh, 9.

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Foster, Yates, & Thom Ltd., Blackburn.

Mollart Engineering Co., Ltd., The, Precision and Production Engineers, Kingston By-Pass, Surbiton, Surrey.

Walters & Dobson Ltd., Bailey Street, Sheffield.

Milling Machines, Universal

Parkinson, J., & Son, Canal Ironworks, Shipley, Yorks.

Nail Making Machinery

Greenwod & Batley Ltd., Albion Works, Leeds.

Heenan & Froude Ltd., Worcester Engineering Works, Worcester.

Pig Iron

Dunford & Elliott (Sheffield) Ltd., Attercliffe Wharf Works, Sheffield.

Pig Iron (*Contd.*)

Stanton Ironworks Co., Ltd., The, Nr. Nottingham.

Stewarts & Lloyds Limited, 41, Oswald Street, Glasgow, C.I.

Pig Iron Casting Machines

Ashmore, Benson, Pease & Co., Ltd., Parkfield Works, Stockton-on-Tees.

Head, Wrightson & Co., Ltd., Teesdale Iron Works, Thornaby-on-Tees: Stockton Forge, Norton Road, Stockton-on-Tees.

Newton, Chambers & Co., Ltd., Beta Works, Butchers Road, Victoria Docks, E.16.

Thornton, B., Limited, Engineers, Hundersfield, Yorks.

Pipes, Aluminium

British Aluminium Co., Ltd., The, Salisbury House, London Wall, London, E.C.2.

Pipes, Brass

Earle, Bourne & Co., Ltd., Birmingham Rolling and Tube Mills, Heath Street South, Birmingham, 18.

Yorkshire Copper Works Ltd., The Leeds.

Pipes, Cast Iron

Aiton & Co., Ltd., Derby.

Bolton's Superheater & Pipe Works Ltd., Adswood, Stockport.

Plowright Brs. Ltd., Engineers, Chesterfield.

Stanton Ironworks Co., Ltd., The, Nr. Nottingham.

Wood, John & Sons Ltd., Barley Brook Foundry and Engineering Works, Wigan.

Pipes, Copper

Earle, Bourne & Co., Ltd., Birmingham Rolling and Tube Mills, Heath Street South, Birmingham, 18.

Shiphams & Company Ltd., Trinity Brass and Copper Works, Hawthorn Avenue, Hull.

Yorkshire Copper Works Ltd., The, Leeds.

Pipes, Lead

Mellows & Co., Ltd., Corporation Street, Sheffield.

Pipes, Riveted Steel

Danks, Edwin, & Company (Oldbury) Ltd., Oldbury, Birmingham.

Dawnays Limited, Steelworks Road, Battersea, London, S.W.11.

Fraser & Fraser Ltd., St. Leonard's Street, Bromley-by-Bow, London, E.3.

Pipes, Riveted Steel—*Contd.*

Towler & Son Ltd., Riverbank Works, Sugar House Lane, Stratford, London, E.15.

*Westwood, Joseph, & Co., Ltd., Napier Pard, Millwall, London, E. 14.

Pipes, Spun Iron

Stanton Ironworks Co., Ltd., The, Nr. Nottingham.

Rivet Making Machinery

Greenwood & Batley Ltd., Albion Works, Leeds.

Screw Machines, Automatic

Butterworth British Automatic Machine Tool Co., Ltd., Rochdale.

Shear Blades

Allen, Edgar & Co., Limited, Imperial Steel Works, Sheffield, 9.

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Moss & Gamble Bros. Ltd., Franklin Works, Wadsley Bridge, Sheffield.

Shearing Machines, Hydraulic

Berry, Henry & Co., Ltd., Croydon Works, Leeds, 10.

Davy & United Engineering Co., Ltd., Park Iron Works, Sheffield, 4.

Fielding & Platt Ltd., Atlas Works, Gloucester.

Shearing Machines, Power

Bertrams Ltd., St. Katherine's Works, Sciennes, Edinburgh, 1.

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Head, Wrightson & Co., Ltd., Teesdale Iron Works, Thornaby-on-Tees; Stockton Forge, Norton Road, Stockton-on-Tees.

Pattinson Bros. Ltd., Love Street, Sheffield, 3.

Sheet Metal Working Machinery

Bigwood, Joshua & Son Ltd., Wednesfield Road, Wolverhampton.

Head, Wrightson & Co., Ltd., Teesdale Iron Works, Thornaby-on-Tees: Stockton Forge, Norton Road, Stockton-on-Tees.

Hordern, Mason & Edwards Ltd., Vulcan Works, Pye Hayes, Birmingham, 24.

Rhodes, Joseph, & Sons Ltd., Grove Iron Works, Wakefield.

Smith, Daniel, Limited, Castle Iron Works, Peel Street, Wolverhampton.

Steel and Iron, Composite

Moss & Gamble Bros. Ltd., Franklin Works, Wadsley Bridge, Sheffield.

Rotherham Forge & Rolling Mills Co., Ltd., Rotherham, Yorkshire.

Steel Bars

Bright Steels Ltd., Norton Works, Malton (Yorks).

Dunford & Elliott (Sheffield) Ltd., Attercliffe Wharf Works, Sheffield.

Hadfield Ltd., East Hecla Works, Sheffield.

Osborn, Samuel, & Co., Limited, Clyde Steel Works, Sheffield.

Bridge, David & Co., Ltd., Castleton Iron Works, Castleton, Manchester.

Hadfields, Ltd., East Hecla Works, Sheffield.

Balfour, Arthur & Co., Ltd., Capital Steel Works, Sheffield.

Cargo Fleet Iron Co., Ltd., Cargo Fleet Ironworks, Middlesbrough.

Hadfields Ltd., East Hecla Works, Sheffield.

Osborn, Samuel, & Co., Limited, Clyde Steel Works, Sheffield.

Rotherham Forge & Rolling Mills Co., Ltd., Rotherham, Yorkshire.

Ward, Thos. W. Ltd., Albion Works, Sheffield, England.

Steel Billets & Blooms

Allen, Edgar, & Co., Limited, Imperial Steel Works, Sheffield 9.

Balfour, Arthur, & Co., Ltd., Capital Steel Works, Sheffield.

Hadfields Ltd., East Hecla Works, Sheffield.

Osborn, Samuel, & Co., Limited, Clyde Steel Works, Sheffield.

Steel

Allen, Edgar, & Co., Limited, Imperial Steel Works, Sheffield 9.

Balfour, Arthur, & Co., Ltd., Capital Steel Works, Sheffield.

Cargo Fleet Iron Co., Ltd., Cargo Fleet Iron Works, Middlesbrough.

Hadfields Ltd., East Hecla Works, Sheffield.

Osborn, Samuel & Co., Ltd., Clyde Steel Works, Sheffield.

Dawnays Ltd., Steel Works Road, Battersea, London, S. W. 11.

Rotherham Forge & Rolling Mills Co., Ltd., Rotherham, Yorkshire.

Stretching Machines (Hydraulic) for Sheets and Sections

Berry, Henry, & Co., Ltd., Croydon Works, Leeds 10.

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Head, Wrightson Co., Ltd., Teesdale Iron Works,
Thornaby-on-Tees.

Stockton Forge, Norton Road, Stockton-on-Tees.

Hydraulic Engineering Co., Ltd., The, Chester.

Taps and Dies

Balfour, Arthur, & Co., Ltd., Capital Steel Works, Sheffield.

Osborn, Samuel, & Co., Limited, Clyde Steel Works, Sheffield.

Winn, Charles, & Co., Ltd., Granville Street, Birmingham 1.

Tube Making Machinery

Brookes (Oldbury) Ltd., Oldbury, Birmingham.

Fielding & Platt Ltd., Atlas Works, Gloucester.

Head, Wrihston & Co., Ltd., Teesdale Iron Works,
Thornaby-on-Tees; Stockton Forge, Norton Road, Stockton-on-Tees.

Welding and Cutting Plant, Electric Arc

Blackmill Engineering Co., Ltd., Mak-Truk Works, Allen Street, Macclesfield.

Laurence, Scott & Electromotors Ltd., Gothic Works, Norwich.

Mawdsley's Ltd., Dursley, Glos.

Siebe, Gorman & Co., Ltd., Davis Road, Tolworth, Surbiton, Surrey.

Welding Equipment

British Oxygen Co., Ltd., The, Grosvenor House, Park Lane, London, W. 1.

General Electric Co., Ltd., The, Magnet House, Kingsway, London, W. C. 2.

Mawdsley's Ltd., Dursley, Glos.

Siebe, Gorman & Co., Ltd., Davis Road, Tolworth, Surbiton, Surrey.

Wire Coiling Machines

Carter, B. & F. & Co., Ltd., Albion Works, Bolton, Lancs.

Wire Insulating Machinery

Bridge, David & Co., Ltd., Castleton Iron Works, Castleton, Manchester.

Wire Insulating Machinery.—(Contd.)

Carter, B. & F. & Co., Ltd., Albion Works, Bolton, Lancs.
Shaw, Francis & Co., Ltd., Corbett Street, Ashton New Road,
Manchester 11.

Wire, Steel

Balfour, Arthur & Co., Ltd., Capital Steel Works, Sheffield.

Workshop Equipment

Chatwood Safe and Engineering Co., Ltd., The, Shrewsbury.
Constructors Ltd., Nickel Works, Tyburn Road, Erdington,
Birmingham 24.

Harvey, G. A. & Co., (London) Ltd., Greenwich Metal Works,
London, S. W. 7.

**LIST OF SOME MACHINES MANUFACTURED
BY U. S. A.**

Alloys (Nonferrous).

American Manganese Bronze Co., Holmesburg, Philadelphia,
Pa.....29.

Ajax Metal Co., Frankford Ave. & Richmond St., Philadelphia,
Pa.

American Brass Co., Waterbury, Conn.

Bohn Aluminum & Brass Corp. 2512 E. Grand Blvd., Detroit,
Mich.

Kramer, H. & Co., 1347-59 W. 21st St., Chicago, Ill.

Lumen Bearing Co., 197, Lathrop St., Buffalo, N. Y.

National Alloys Co., 2118-22 E. Woodbrige St., Detroit, Mich.

National Lead Co., 111 Broadway, New York, N. Y.

Balls (Steel).

Gwilliam Co., 360 Furman St., Brooklyn, N. Y.....110, 111.

SKF Industries, INC., Front St. & Erie, Ave., Philadelphia,
Pa.....185.

Abbe Engrag. Co., 50 Church St., New York, N. Y.

Hartford Steel Ball Co., Hartford, Conn.

Hoover Ball & Bearing Co., Ann Arbor, Mich.

Philadelphia Steel & Orpm Co., P. O. Box 44, Conshohocken,
Pa.

Taylor-Wharton Iron & Steel Co., Highbridge, N. J.

Bars (Steel).

American Steel & Wire Co., Rockefeller Building, Cleveland, Ohio.
 Bethlehem Steel Co., Bethlehem, Pa.
 Denman & Davis, 930 38th St., North Bergen, N. J.
 Firth-Sterling Steel Co., McKeesport, Pa.
 Hobson Houghton & Co., Inc., 790, Greenwich St., New York, N. Y.
 Jones & Laughlin Steel Corp., Jones & Laughlin Building, Pittsburgh, Pa.
 National Forge & Ordinance Co., Irvine, Warren Co., Pa.
 Nicetown Plate Washer Co., 1824, W. Juniata St., Philadelphia, Pa.
 Ryerson, Joseph T., & Son, Inc., 16 & Rocwells Streets, Chicago, Ill.
 Universal-Cyclops Steel Corp., Bridgeville, Pa.
 West Virginia Rail Co., 17th & B. & O. Ry., Huntington, W. Va.

Bearings (Ball).

Aetna Ball Bearing Mfg. Co., 4600 Schubert Avenue, Chicago, Ill.....16
 Gwilliam Co., 360, Furman St., Brooklyn N. Y.....110, 111.
 Link-Belt Co., 300 W. Pershing Road, Chicago, Ill.....140
 Norma-Hoffmann Bearings Corp., Stamford, Conn.....162
 SKF Industries, INC., Front Street & Erie Avenue, Philadelphia, Pa.....185. ...
 Auburn Ball Bearing Co., 57, Clarissa Street, Rochester, N. Y.
 Bearings Industry Corp., 1834, Broadway, New York, N. Y.
 McGill Mfg. Co., Valparaiso, Ind.

Billets (Steel).

Timken Roller Bearing Co., Steel and Tube Div., Canton, Ohio, 207.
 Alan Wood Steel Co., Conshohocken, Pa.
 Great Lakes Steel Corp., Ecorse, Detroit, Mich.
 Harrisburg Steel Corp., P.O. Box 329, Harrisburg, Pa.
 Inland Steel Company, 38 S. Dearborn St., Chicago, Ill.
 Midvale Co., Nicetown, Philadelphia, Pa.
 Republic Steel Corp., Cleveland, Ohio.
 Universal-Cyclops Steel Corp., Bridgeville, Pa.
 Wickwire Spencer Steel Co., 500 5th Ave., New York, N. Y.

Blooms (Steel).

Alan Wood Steel Co., Conshohocken, Pa.
 Andrews Steel Co., Newport, Ky.
 Erie Forge Co., Erie, Pa.
 Inland Steel Company, 38, Dearborn St., Chicago, Ill.
 Republic Steel Corp., Cleveland, Ohio.
 Sharon Steel Corp., Bridgeville, Pa.
 Wickwire Spencer Steel Co., 500 5th Ave., New York, N. Y.
 Youngstown Sheet & Tube Co., Youngstown, Ohio.

Boilers.

Babcock & Wilcox Co., 85, Liberty St., New York, N. Y.....38, 39, 40, 41
 Combustion Engineering Co., Inc., 200 Madison Avenue, New York, N. Y.....74, 75.
 Edge Moor Iron Works, Inc., 30, Rockefeller Plaza, New York, N. Y.....86.
 Foster Wheeler Corp., 165, Broadway, New York, N. Y.....96
 Springfield Boiler Co., 1963 E. Capitol Avenue, Springfield, Ill.....199.
 Erie City Iron Works, Erie, Pa.
 Oil City Tank & Boiler Company, P.O. Box No. 133, Oil City, Pa.
 Page Boiler Company, 815-819 W. Webster Avenue, Chicago, Ill.

Capstans.

American Engineering Co., 2488 Aramingo Ave., Philadelphia, Pa.....27.
 Shepard Niles Crane & Hoist Corp., 345 Schuyler Ave., Montour Falls, N. Y.....195.
 Watson-Flag Machine Co., 833-863 E. 25th St., Paterson, N. J.....217.
 Erie Hoist Co., 2101 Holland St., Erie, Pa.
 Lidgerwood Mfg. Co., 775 Lidgerwood Ave., Elizabeth, N. J.
 Silent Hoist Winch & Crane Co., 861 63rd St., Brooklyn, N. Y.
 Treadwell Engrg. Co., Easton, Pa.

Chain Making Machines.

Baird Machine Co., Bridgeport, Conn.
 Henry & Wright Mfg. Co., Hartford, Conn.

Compounds (Hardening, Steel).

- American Cynamid & Chemical Corp., 30 Rockefeller Plaza,
New York, N. Y.....
- Bellis Heat Treating Co., Branford, Conn.
- Case Hardening Service Co., 2281 Scranton Rd. Cleveland,
Ohio.
- du Pont de Nemours, E. I. & Co., Inc., Wilmington, Del.

Compounds (Impregnating, Electric).

- Bakelite Corp., 32 E. 42nd St., New York, N. Y.....44.
- General Electric Co., 1 River Road, Schenectady, N. Y.....
100, 101.
- Ironsides Co., 270 W. Mound St., Columbus, Ohio.
- Sterling Varnish Co., Haysville, Pa.
- Thompson & Co., Box 6757, Pittsburgh, Pa.

Compounds (Metal Polishing).

- Hanson-Van Winkle-Munning Co., Matawan, N. J.
- Harris, A. W. Oil Co., P. O. Box 1295, Providence, R. I.

Concentrating Machines (Ore)

- Coeur d' Alene Hardware & Foundry Co., Wallace, Idaho.
- Deister Concentrator Co., 901-935 Glasgow Ave., Ft. Wayne,
Ind.
- Southwestern Engrg. Co., 4800 S. Santa Fe Ave., Los Angeles,
Calif.
- Stearns Magnetic Mfg. Co., 614 S. 28th St., Milwaukee, Wis.
- Stearns-Roger Mfg. Co., 1718-20 California St., Denver, Colo.

Enameling Machines (Wire).

- American Insulating Machinery Co., Fairhill & Huntington Sts.,
Philadelphia, Pa.

Enamels.

- Arc Co., 7301 Pessemer Ave., Cleveland, Ohio.
- Harrison Paint & Varnish Co., 1329 Harrison Ave., S. W.
Canton, Ohio.
- Sherwin-Williams Co., 101 Prospect Ave., N. W. Cleveland,
Ohio.
- Toch Bros., Inc., 2600 Richmond Terrace, Staten Island, N. Y.

Engines (Automotive, Diesel).

Caterpillar Tractor Co., Peoria, Ill.

Comminus Engine Co., Columbus, Ind.

Engines (Oil Diesel).

Allis-Chalmers Mfg. Co., Milwaukee, Wis.....20, 21.

American Locomotive Co., Diesel Engine Div., Auburn,
N. Y.....28.

Pusch-Sulzer Bros-Diesel Engine Co., St. Louis, Mo.....62.

Chicago Pneumatic Tool Co., 6E. 44th St., New York,
N. Y.....71.

Ingersoll-Rand Co., 11 Broadway, New York, N. Y.....120, 121.

Hercules Motors Corp., Canton, Ohio.

Venn-Severin Machine Co., 1317-27 W. North Ave., Chicago Ill.

Fibre (Vulcanized).

General Electric Co., 1 River Road, Schenectady,
N. Y.....100, 101.

Continental Diamond Fibre Co., Newark, Del.

National Vulcanized Fibre Co., Wilmington, Del.

Taylor Fibre Co., Norristown, Pa.

Wilmington Fibre Peciality Co., Wilmington, Del.

Furnaces (Boiler).

American Arch Co., Inc., 64 E. 42nd St., New York,
N. Y.....23.

Babcock & Wilcox Co., 85 Libery St., New York,
N. Y 38, 39, 40, 41.

Bernitz Furnace Appliance Co., 89 Broad St., Boston,
Mass.....53.

Bigelow-Liptak Corp., 2486 W. Grand Blvd., Detroit,
Mich.....54, 55.

Combustion Engineering Co., Inc. 200 Madison Ave., New York,
N. Y.....74, 75.

Furnaces (Blast).

Chicago Bridge & Iron Company, 2131 McCormick Bldg.,
Chicago Ill.....69.

Bailey, William M., Co., Magee Bldg., Pittsburgh, Pa.

Chattanooga Boiler & Tank Co., Box 316, Chattanooga, Tenn.

Mohar, John, & Sons, 3200 E. 96th St., Chicago, Ill.

Standard Boiler & Plate Iron Co., Niles, Ohio.

Tippett & Wood, 175, Howard St., Phillipsburg, N. J.

Generating Sets (Electric).

Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	20, 21.
De Laval Steam Turbine Co., Trenton N. J.....	81.
Moore Steam Turbine Div., Washington Pump & Machinery Corp., Wellsville, N. Y.....	152.
Murray Iron Works Company, Burlington, Iowa.....	153.
Terry Steam Turbine Co., Hartford, Conn.....	205.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.....	218, 219.

Heading Machines (Bolt and Screw).

Ajax Mfg. Co., The Eculid Br. P. O., Cleveland, Ohio.	
Cook, Asa C., Co., The 133 Chestnut St., New Haven, Conn.	
Manville, E. J., Machine Company, The Waterbury, Conn.	
Pawtucket Mrg. Co., Pawtucket, R. I.	
Sinmonus Machine Tool Corp., Troy Road, Albany, N. Y.	
Waterbury Farrel Foundry & Machine Co., 453, Bank St., Waterbury, Conn.	

Ingots (Steel).

Alan Wood Steel Co., Conshohocken, Pa.	
Heppenstall Co., 4620 Hatfield St., Pittsburgh, Pa.	
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.	
National Forge & Ordnance Co., Irvine, Warren Co., Pa.	
Sharon Steel Corp., Sharon, Pa.	
Universal-Cyclops Steel Corp., Bridgeville, Pa.	
Youngstown Sheet & Tube Co., Youngtown, Ohio.	

Insulators (Electric).

General Electric Co., 1 River Road, Schenectady, N. Y.....	100, 101.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.....	218, 219.
Continental Diamond Fibre Co., Newark, Del.	
Delta-Star Electric Co., 2400 Block, Fulton St., Chicago, Ill.	
Ohio Brass Co., Mansfield, Ohio.	

Iron (Pig).

Alan Wood Steel Co., Conshohocken, Pa.	
Republic Steel Corp., Cleveland, Ohio.	

Iron (Pig)—(Contd.).

Sharon Steel Corp., Sharon, Pa.
Wickwire Spencer Steel Co., 500 5th Ave., New York, N. Y.,
Youngstown Sheet & Tube Co., Youngstown, Ohio.

Lathes (Screw Cutting).

Atlas Press Co., 1819 N. Pitcher St., Kalamazoo, Mich.
Automatic Machinery Mfg. Co., 113 E. Washington Ave.,
Bridgeport, Conn.
Cincinnati Lathe & Tool Co., 3207-11 Disney Ave., Oakley,
Cincinnati, Ohio.
Gisholt Machine Co., 1325 E. Washington Ave., Madison, Wis.
Rivett Lathe & Grinder, Inc., Brighton, Boston, Mass.

Locomotives (Industrial, Diesel-Electric).

General Electric Co., 1 River Road, Schenectady, N. Y.....
100, 101.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.....
218, 219.
Atlas Car & Mfg. Co., 1100 Ivanhoe Rd., Cleveland, Ohio.
Davenport Besler Corp., Rockingham Rd., Davenport, Iowa.
Porter, H. K., Co., Inc., 49th & Harrison Sts., Pittsburgh, Pa.
Baldwin Locomotive Works, Philadelphia, Pa.

Locomotive (Steam).

Baldwin Locomotive Works, Philadelphia, Pa.
Lima Locomotive Works, Inc., Lima, Ohio.
Porter, H. K., Co., Inc., 49th & Harrison Sts., Pittsburgh, Pa.

Paints, Industrial.

Barrett Co., 40 Rector St., New York, N. Y.
Cheesman-Elliott Co., Inc., 639-647 Kent Ave., Brooklyn, N. Y.
Dampney Company of America, The 1243 River St., Hyde Park,
Boston, Mass.
Hilo Varnish Corporation, 42-60 Stewart Ave., Brooklyn, N. Y.
Inetrol Co., Inc., 401 Broadway, New York, N. Y.
Thompson & Co., Box 6757, Pittsburgh, Pa.

Plates (Steel).

American Locomotive Co., Railway Steel Spring Div., 30 Church St., New York, N. Y.
 Inland Steel Company, 38 S. Dearborn St., Chicago III.
 Republic Steel Corp., Cleveland, Ohio.
 Scully Steel Products Co., 1319 Wabansia Ave., Chicago, III.
 Wholey, Boiler Company, 18 Cross St., Providence R. I.
 Youngstown Sheet & Tube Co., Youngstown, Ohio.

Rails (Steel).

Carnegie-Illinois Steel Corp., Pittsburgh, Pa.
 Inland Steel Company, 38 S. Dearborn St., Chicago, III.
 Scully Steel Products Co., 1319 Wabansia Ave., Chicago, III.
 Weir-Kirby Corp., Sta. H., Cincinnati, Ohio.
 West Virginia Rail Co., 17th & B. & O. Ry., Huntington, W. Va.

Screw Machines (Automatic).

Billings & Spencer Co., 1 Laurel St., Hartford, Conn.
 Cleveland Automatic Machine Co., 2269 Ashland Rd., Cleveland, Ohio.
 National Acme Co., Cleveland, Ohio.
 Simmonus Machine Tool Corp., Troy Rd., Albany, N. Y.

Stampings (Sheet Metal, Any Metal).

Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6404 Miller Ave., Detroit, Mich.....48.
 Cook Plant of Barnes-Gibson-Raymond Div. of Associated Spring Corp., Ann Arbor, Mich.....48.
 Gibson, William D., Co., Div. Associated Spring Corp., 1808 Clybourn Ave., Chicago, III.....103.
 Hunter Pressed Steel Co., Lansdale, Pa.....6.
 Melrath Supply & Gasket Co., Inc., Tioga & Memphis Sts., Philadelphia, Pa.....148.
 Phoenix Specialty Mfg. Co., Inc., 155 Wooster St., New York, N. Y.....171.

Steel (Alloy).

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, Pa.....19.
 Timken Roller Bearing Co., Steel and Tube Div., Canton, Ohio.....207.

**Steel (Alloy)—(Contd.).**

Alan Wood Steel Co., Conshohocken, Pa.

Bethlehem Steel Co., Bethlehem, Pa.

Denman & Davis, 930 38th St., North Bergen, N. J.

Prosser, Thomas, & Son, 120 Wall St., New York, N. Y.

Universal-Cyclops Steel Corp., Bridgeville, Pa.

Steel (Carbon).

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh,
Pa.....19.

American Steel & Wire Co., Rockefeller Bldg., Cleveland, Ohio.

Firth-Sterling Steel Co., McKeesport, Pa.

Jessop, William, & Sons, Inc., 627 6th Ave., New York, N. Y.

National Forge & Ordnance Co., Irvine, Warren Co., Pa.

Prosser, Thomas & Son, 120 Wall St., New York, N. Y.

Steel (High Speed).

Armstrong Bros. Tool Co., 317-357 N. Francisco Ave., Chicago,
III.

Columbia Tool Steel Co., Lincoln Highway & State St., Chicago
Heights, III.

Darwin & Milner, Inc., 1260-64 W. 64th St., Cleveland, Ohio.

Disston, Henry, & Sons, Inc., Tacony, Philadelphia, Pa.

McInnes Steel Co., 441 E. Main St., Corry, Pa.

Steel (Stainless).

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh,
Pa.....19.

Timken Roller Bearing Co., Steel And Tube Div., Canton,
Ohio.....207.

American Rolling Mill Co., 703 Curtis St., Middletown, Ohio.

Carpenter Steel Co., 131 Bern St., Reading, Pa.

Darwin & Milner, Inc., 1260-64 W. 4th St., Cleveland, Ohio.

Jessop, William, & Sons, Inc., 627 6th Ave., New York, N. Y.

Ryerson, Joseph T., & Son, Inc., 16th & Rockwells Sts.,
Chicago, III.

Steel (Tool).

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh,
Pa.....19.

Timken Roller Bearing Co., Steel And Tube Div., Canton,
Ohio.....207.

Steel (Tool)—(Contd.).

American Steel & Wire Co., Rockefeller Bldg., Cleveland, Ohio.
 Crucible Steel Co. of America, 405 Lexington Ave., New York,
 N. Y.
 Darwin & Milner, Inc., 1260-64 W. 4th St., Cleveland, Ohio.
 Jessop, William, & Sons, Inc., 627 6th Ave., New York, N. Y.
 Ziv Steel & Wire Co., 2945 W. Harrison St., Chicago, Ill.

Tools (Special).

Barber-Colman Co., Rockford, Ill.....194.
 Bossert Co., Inc., Utica, N. Y.
 Everard Tap & Die Corp., 213-215 East 144th St., New York,
 N. Y.
 General Machinery Corp., Niles Tool Works Div., Hamilton,
 Ohio.
 Hart, Frederick, & Co., Inc., Poughkeepsie, N. Y.
 National Tool Co., Cleveland, Ohio.
 Waltham Machine Works, Waltham, Mass.

Varnishes (Insulating).

Bakelite Corp., 30 E. 42nd St., New York, N. Y.....44.
 Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.....
 218, 219.
 Arco Co., 7301 Bessemer Ave., Cleveland, Ohio.
 Keystone Varnish Co., 71 Otsego St., Brooklyn, N. Y.....
 Sterling Varnish Co., Haysville, Pa.

Wire (Molybdenum).

Callite, Tungsten Corp., 540 39th St., Union City, N. J.
 Fansteel Metallurgical Corp., 2200 Sheridan Rr., North
 Chicago, Ill.

Wire (Steel).

Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh,
 Pa.....19.
 Roebling's John A., Sons Co., Trenton, N. J.....182.
 Philadelphia Steel & Wire Corp., Germantown, Philadelphia, Pa.
 Townsend Co., New Brighton, Pa.
 Youngstown Sheet & Tube Co., Youngstown, Ohio.

Indian Government Trade Commissioners.

Place	Name & Address	Jurisdiction
1. London	1. Mr. M. J. Desai, C.I.E., I.C.S., Commercial Advisor to the High Commissioner for India, London; 2. Mr. A. S. Lall, M.B.E., I.C.S., Indian Trade Commissioner, India House, Aldwych, London W.C.2. Tele. Address: C/o. HICOMIND, London.	United Kingdom and such other countries in the continent of Europe with which private trading has been resumed, except countries under the jurisdiction of the Paris Office.
2. New York	Mr. R. R. Saksena, M.A., L.L.B., Consul General for New York 630, Fifth Avenue, New York, N. Y. Tele. Address: CONGENDIA, New York.	United States of America.
3. Buenos Aires	Mr. J. R. K. Modi, B.A., Indian Government Trade Commissioner, Avenida Roque Saenz Pena 621, Buenos Aires. Argentine. Tele. Address: INDTRACOM, Buenos Aires.	Whole of South America as far north as and including Guatemala.
4. Toronto	Mr. M. R. Ahuja, O.B.E., Indian Government Trade Commissioner, Royal Bank Building, Toronto, Canada, Tele. Address: INDITRACOM, Toronto.	Dominion of Canada and Newfoundland.
5. Sydney	Indian Government Trade Commissioner, Prudential Building, Martin Place, Sydney, Australia. Tele. Address: A U S T R I N D, Sydney.	Australia and New Zealand.
6. Mombasa	Sardar Sahib Sangat Singh, Indian Government Trade Commissioner. "Africa House" Killindini Road, Post Box No. 614. Mombasa Tele. Address: INDOCOM, Mombasa.	East Africa (Keyna, Uganda and Tanganyika) Zanzibar, and Belgian Congo.

Place	Name & Address	Jurisdiction
7. Alexandria	Indian Government Trade Commissioner, Al Bashir Building No. 5, Rue Adib Bey Issac. Avenue de la Reine Nazli, Alexandria Egypt. Tele. Address: INDIACOM Alexandria.	Turkey, Syria, Palestine, Transjordan, Saudi-Arabia, Iraq, Arab Shore of Persian Gulf (including Baharian and Kuwait, Muscat, the Sudan and Yeman), Egypt.
8. Tehran	Indian Government Trade Commissioner. Avenue Ferdowsi, Tehran, Tele. Address: INDIACOM, Tehran.	Persia (Iran).
9. Colombo	Dr. T. G. Menon, Indian Government Trade Commissioner, Chaffoor Building, Fort, Colombo. Tele. Address: TRADIND, Colombo.	Ceylon.
10. Paris	S. S. Bajai Esq., Indian Government Trade Commissioner, 31, Rue De La Baume. Paris viii e. France. Tele. Address: INDATRACOM, Paris.	Portugal, Spain, France, Switzerland, Luxemburg, Belgium, Holland, Denmark, Czechoslovakia, Norway and Sweden.
11. Tokyo	Mr. D. G. Mulherker, Indian Government Trade Commissioner, C/o. Indian Liaison Mission, Tokyo, Japan. Tele. Address: Care INDIA, Tokyo.	Japan.
12. Rangoon	Indian Government Trade Commissioner C/o. Indian Embassy, Randeria Building Phayre Street, Rangoon, Burma. Tele. Address: Care INDEMBASSY, Rangoon.	Burma.
13. Berlin	The Economic Advisor to the Indian Military Mission C/o, Hq. Control Commission, Germany (B. E.) Berlin, B. A. O. R. Tele. Address: Indian Military Mission BERCOMB, Berlin.	Germany and Austria.

List of Trade Commissioners of Foreign Governments in India

1. THE UNITED KINGDOM United Kingdom Senior Trade Commissioner in India & Ceylon, 6, Albuquerque Road, NEW DELHI.
United Kingdom Trade Commissioner in India, B, Witlet Road, Ballard Estate, Post Box, No. 815, BOMBAY.
United Kingdom Trade Commissioner in India, Post Box No. 683, Fairlie House, Fairlie Place, CALCUTTA.
2. CANADA Canadian Government Trade Commissioner in India, Burma and Ceylon, Gresham Assurance House, Winto Road, P.O. No. 886, BOMBAY.
3. AUSTRALIA Senior Australian Government Trade Commissioner in India, Menkwa Buildings, Outram Road, BOMBAY.
Australian Government Trade Commissioner in India, 2, Fairlie Place, CALCUTTA.
4. NEW ZEALAND New Zealand Government Trade Commissioner in India, New Zealand Government Office, Post Box No. 1194, BOMBAY.
5. CEYLON Trade Commissioner for Ceylon in India, Ceylon House, Hornby Road, BOMBAY.
6. SWITZERLAND Swiss Trade Commissioner for British India, Burma & Ceylon, Gresham Assurance House, Sir Pherozeshah Mehta Road, BOMBAY.
7. IRAN (PERSIA). Trade Commissioner for Iran in India, Dorchester Flat 4 H, Queen Road, Fort, BOMBAY.
8. NETHERLAND EAST INDIES & HOLLAND N. E. I. Trade Commissioner in India, Post Box No. 260, BOMBAY.
9. U. S. S. R. Trade Agent of the U.S.S.R. in India, 4, Camac Street, CALCUTTA.
10. CZECHOSLOVAKIA Czechoslovakian Trade Commissioner for India, No. 43, Mahatma Gandhi Road, BOMBAY.
11. ITALY Italian Government Trade Commissioner in India, 5, Homji Street, BOMBAY.
12. TURKEY Commercial Representative of the Turkish Government in India, No. 1, Tughlak Lane, NEW DELHI.
13. DENMARK Danish Government Trade Commissioner in India, C/o. Royal Danish Consulate, Indian Merchantile Chambers, Nicol Road, Ballard Estate, P.O. Box, 254, BOMBAY.

**List showing names of Indian Ambassadors
and other Representatives Abroad.**

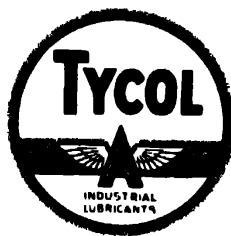
AMBASSADORS IN FOREIGN COUNTRIES.

1. CHINA. His Excellency Mr. K. P. S. Menon, C.I.E., I.C.S., Ambassador of India in China, NANKING.
2. UNITED STATES OF AMERICA. His Excellency Mr. Asaf Ali, Bar-at-Law, Ambassador of India in the United States of America, WASHINGTON.
3. U. S. S. R. Her Excellency Mrs. Vijayalakshmi Pandit, Ambassador of India in U.S.S.R., MOSCOW.
4. IRAN. His Excellency Mr. Ali Zaheer, Bar-at-Law, Ambassador of India in IRAN.
5. NEPAL. His Excellency Sirdar Surjit Singh Majethia, Ambassador of India in Nepal, KATMANDU.
6. BURMA. His Excellency Dr. M. A. Rauf, B. C. L. (Oxon.), LL.D., Bar-at-Law, Ambassador of India in Burma, RANGOON.
7. EGYPT. Dr. Syed Hussian, Bar-at-Law, Ambassador (designate), Extraordinary & Plenipotentiary of India in Egypt, CAIRO.

OTHER REPRESENTATIVES IN FOREIGN COUNTRIES.

8. JAPAN. Sir B. Rama Rao, I.C.S., Head of the Indian Liaison Mission, TOKYO.
9. SIAM. Mr. Bhagwat Dayal, Charge d' Affaires of India in Siam, BANGKOK.
10. SHANGHAI. Captain R. D. Sathe, Consul for India in SHANGHAI.
11. INDO-CHINA. Major A. N. Mehta, Consul for India in SAIGON.
12. PONDICHERRY. Mirza Rashid Ali Baig, Consul General for India in The French Establishments in India at PONDICHERRY.
(He is also Consul for India in the Portuguese Possessions with Headquarters at PONDICHERRY.).
13. FRANCE. Sir Raghvan Pillai, K. C. I. E., Charge d' Affaires of India in France, PARIS.
14. SWITZERLAND. Mr. Dhirajlal Bhulabhai Desai, Envoy Extraordinary & Minister Plenipotentiary of India in Switzerland, BERNE.
15. BELGIUM. Mr. B. F. H. B. Tyabji, Charge d' Affaires of India in Belgium, BRUSSELS.

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**High Commissioners and other Representatives
in the Commonwealth Countries.**

16. UNITED KINGDOM. Mr. V. K. Krishna Menon, Bar-at-Law, High Commissioner for India in United Kingdom, LONDON.
17. CANADA. Mr. H. S. Malik, C.I.E., High Commissioner for India in Canada, OTTAWA.
18. PAKISTAN. Mr. Sri Prakasa, Bar-at-Law, High Commissioner for India in Pakistan, KARACHI.
Mr. V. Viswanathan, I.C.S., Dy. High Commissioner for India in Pakistan, KARACHI.
Sirdar Sampuran Singh, Dy. High Commissioner for India in Pakistan, LAHORE.
19. AUSTRALIA. Sir Raghunath P. Paranjpye, M.A. (Cantab), D.S.C., High Commissioner for India in Australia, CANBERRA.
20. CEYLON. Mr. V. V. Giri, Bar-at-Law, High Commissioner for India in Ceylon, COLOMBO.
Mr. N. E. S. Raghavchari, I.C.S., Agent of the Government of India in Ceylon, KANDY.
21. MALAYA. Mr. J. A. Thivy, Bar-at-Law, Representative of the Government of India in Malaya, SINGAPORE.
Mr. T. J. Nataraja Pillai, Agent of the Government of India in Malaya, KUALA-LAMPUR.

LIST OF FOREIGN AND COMMONWEALTH REPRESENTATIVES IN INDIA

PART I.—Foreign Embassies in India

Country	Station	Designation	Name	Address
BELGIUM	New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency Prince de Ligne.	Residence at 24, Harding Avenue, New Delhi.
BURMA	New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency U. Win.	Residence at 40, Ratendone Road, and Office at Theatre Communications Buildings, Connaught Place, New Delhi.
CHINA	New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency Dr. Lo Chia-Luen.	Residence and office at Jind House, New Delhi.
FRANCE	New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency Mons Danial Levi.	Office at 2, Aurangzeb Rd., New Delhi.
IRAN	New Delhi.	Charge d' Affaires.	Monsieur Ali Motamedy.	Residence and office at 4, Albuquerque Road, New Delhi.
		Consul	Monsieur Mohammad Ali Moaddell	

NEPAL

New Delhi	Ambassador Extraordinary and Plenipotentiary.	His Excellency Commanding General Shingha Shumshere Jang Bahadur Rana.	Residence and office at 12, Bara Khamba Road, New Delhi.
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Counsellor Lieut.-Colonel G. S. Thapa.

NETHERLANDS

New Delhi.	Ambassador Extraordinary and Plenipotentiary,	His Excellency Monsieur A. T. Lamping.	Residence at 10, Aurangzeb Road, New Delhi.
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**UNITED STATES
OF AMERICA**

New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency Dr. Henry F. Grady.	Residence at 1, Bhagwandas Road, New Delhi.
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Counsellor

Mr. Howard Donovan

Office at Rahawalpur House,
New Delhi.

Vice-Consul
Vice-Consul

Mr. Cleveland B. McKnight.
Miss Virginia Ellis.

**UNION OF SOVIET
SOCIALIST
REPUBLICS.**

New Delhi.	Ambassador Extraordinary and Plenipotentiary.	His Excellency Monsieur Kiril Vasilevitch Novikow	Residence and office at Imperial Hotel, New Delhi.
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Minister Counsellor Mr. A. U. Vossiliev.

Part II.—Legations in India.

Country	Station	Designation	Name	Address
SIAM	New Delhi	Charge d' Affaires	Dr. Thanat Khoman	Residence at 15, Aurangzeb Road, New Delhi. Legation Office at Swiss Hotel, Delhi.

Part III.—High Commissioners

Country	Station	Designation	Name	Address
AUSTRALIA	New Delhi	High Commissioner.	Lieut.-General Sir Iven Mackey K B.E., C.M.G., D.S.O., V.D.,	Residence at 24, Ferozeshah Road, New Delhi and office at Connaught Place, New Delhi.
CANADA	New Delhi	High Commissioner	Mr. John D. Kearney	Residence and office at 4, Aurangzeb Road, New Delhi.
		Counsellor	Mr. S. Morley Scott.	
PAKISTAN	New Delhi	High Commissioner	Mr. Zahid Hussain, C.I.E.,	Residence and office at 8-B, Hardinge Avenue, New Delhi

UNITED KINGDOM New Delhi High Commissioner Sir Terence Shone, K C M G. Residence at 2, King George's Avenue, New Delhi and office at 6, Albuquerque Road, New Delhi.

133

Deputy High Commissioner Mr. A. C. B. Symon, B B E.

Part IV.—Representatives.

CEYLON New Delhi Special Representative of the Government of Ceylon in India Mr. M. W. H. de Silva, K C., Residence at 3, Harding Avenue, New Delhi, and office at 2, Scindia House, Queensway, New Delhi.

Part V.—Consul-General.

Country	Station	Designation	Name	Address
AFGANISTAN	New Delhi	Consul General	Monsieur Ghulam Mohammad Khan	24, Ratendone Road, New Delhi.
	Bombay	Consul	Mr. Fazal Ahmed Khan	115, Walkeshwar Road, Bombay

PART VI.—Foreign Consular Officers in India.—(Corrected up to 4th January, 1948).

Country	Station	Designation	Name	Address
ARGENTINE	Calcutta	Vice-Consul	.....	5, Fairlie Place, Calcutta.
AUSTRIA	.....	Consul	.....	(Vacant)
BELGIUM	Bombay	Consul-General	Mons. Georges Carlier	“Morena”, 11, Carmichael Road, Cumballa Hill, Bombay.
		Vice-Consul Vice Consul	Mr. Alfred Jacquet Mr. Jacques Boon	
	Calcutta	Consul-General	.....	(Vacant)
		Vice-Consul	Mr. Bouha	(In-charge of the Consulate-General)
	Madras	Consul	Colonel D. M. Reid, O. B. E., M. C., E. D.	
		Consul	Mr. K. H. Chambers	
BOLIVIA	Calcutta	Consul-General	Mr. B. Matthews	
BRAZIL	Bombay	Consul	.....	Asian Buildings, Ballard Estate, Bombay.
		Vice-Consul	Mr. Frederick Joseph Heredia	

CHINA	Bombay	Consul Deputy Consul	 Mr. T. C. Yu.	Co-operative Insurance Bldg., Sir Pherozshah Mehta Road, Bombay.
	Calcutta	Consul-General Consul	Dr. W. P. Tsai Mr. Y. Y. Chen	.....
	Calcutta Madras	Consul Consul-General	 Senor Alfonso Tavera G.	(Vacant)
COLOMBIA	Calcutta	Consul	.....	(Vacant)
	Bombay	Consul	Mr. E. Mascarenhas	Readymoney Mansion. Churchgate Street, Bombay.
COSTA RICA	Calcutta	Consul-General	.....	(Vacant)
	Bombay	Consul-General	Mons. Josef Lusk	87, Wodenhouse Road, Colaba, Bombay.
CZECHOSLOVAKIA	Calcutta	Consul	.....	(Vacant).
	Bombay	Consul	Mr. Bertil Thorstenson	Indian Mercantile Chambers Nicol Road, Ballard Estate, Bombay.
DENMARK	Calcutta	Consul	Mr. W. T. Holmgard	.
	Calicut	Vice-Consul	.....	(Vacant)
	Madras	Consul	Mr. B. B. Robey	
		Consul	Mr. Orla Christensen	

PART VI.—Foreign Consular Officers in India.—(Corrected up to 4th January 1948)—Contd.

Country	Station	Designation	Name	Address
DOMINICAN REPUBLIC	Calcutta	Consul	Mr. R. N. Roy.	
	Cochin	Vice-Consul	.....	.(Vacant)
ECUADOR	Calcutta	Consul	Mr. L. W. Balcombe Mr. A. H. Home	6, Lyons Range, Calcutta
EGYPT	Bombay	Consul-General	Mons. El Hoseiny El Khatib	Cumballa Buildings, 42, Queens Road, Churchgate Reclamation, Bombay
EL SALVADOR	Calcutta	Consul	Mr. Karanjaksha Banerjee	Rama Niketan, 10, P. K. Tagore Street, Calcutta
FINLAND	Bombay	...	.....	Interests in charge of the Consulate Officers for Sweden.
	Calcutta	...	.....	The Consul for Sweden is in charge of Finnish inter- ests in Calcutta
FRANCE	Bombay	Consul	Mons. H. De Limairac	Celandine, 87-B. Nepean Sen Road, Bombay.

FRANCE—Contd.	Calcutta	Consul-General	Mons. R. Kolh-Bernard.	
	Cochin	Consular Agent	Mr. B. S. Holloway	
	Madras	Consular Agent	Mr. Yves Beoq.	
GERMANY		Consulate General	for Switzerland at Bombay has agreed to continue to maintain provisionally the safeguarding of German ex-territorial premises and archives.	
GREECE	Bombay	Consul-General	Mons. P. N. Philor	17, Jiji House, Ravelin Street, Fort Bombay.
	Calcutta	Consul	Mr. B. Mathews.	
GUATEMALA	Bombay	Consul	.....	(Vacant)
	Calcutta	Consul	.....	(Vacant)
HAYTI	Calcutta	Consul	Mr. Murari Charan Law	
HUNGARY	Bombay	Consul	Swedish Consular Officers in India are in charge of Hungarian interests.	
	Calcutta	Consul		
	Madras	Consul		
IRAN	Bombay	Consul	Mons. H. Bahadorie	45-G, Navroji Gamadia Road, Off Warden Road, Bombay.
		Vice-Consul	Mons. A. Rafaat.	
	Calcutta	Consul	.....	(Vacant).
	Madras	Consul	.....	(Vacant).

PART VI.—Foreign Consular Officers in India.—(Corrected upto 4th January, 1948)—Contd.

Country.	Station	Designation	Name	Address
IRAQ	Bombay	Consul General	.....	“Panorama” 203, Walkeshwar Road, Bombay. (Vacant)
ITALY	Bombay	Consul General	Signor Mario Orsini Ratto	“Cama Lodge” 19, Pedder Road, Bombay.
JAPAN	Swedish Consular Officers in Bombay are incharge of the Japanese interests.			
LATVIA	Bombay	Consul	.....	..... (Vacant)
LEBANON	Bombay	Consul General	Mr. Tarek El-Yaffi	Churchgate House, Churchgate street, Bombay.
LIBERIA	Calcutta	Consul	.....	..... (Vacant)
LUXEMBURG	Bombay	Vice-Consul	Mons. Alphonso Alo	2nd Floor, Taj Building, Hornby Road, Bombay.
MEXICO	Calcutta	Consul	.....	..... (Vacant)
MONACO	Bombay	.....	.....	..... (Vacant)

NEPAL	Calcutta	Consul General	Prakhyat Trishakti Patta Pravala Gorkha Dakshina Bahu, Commandar Colonel Daman Shamshere Jung Jung Bahadur Rana, C. I. E., C. B. E.	25, Raja Santosh Road, Calcutta.
	Bombay	Consul	Mons. G. Velthorst	314, Hornby Road, Empire of India Life Assurance Building, Bombay.
NETHERLANDS	Calcutta	Consul General	.....	..... (Vacant)
		Consul	Mons. C. E. Van Aken	
NICARAGUA.		Vice Consul	.....	(Vacant)
	Cochin	Consul	Mons. C. J. J. Hardebeck	
	Madras	Consul	Mr. A. D. Charles.	
	Bombay	Consul	Mr. C. H. A. Hardcastle	Alice Building, Hornby Road. Bombay
	Calcutta	Consul	(United States of America Consular representatives in Calcutta will protect the Nicaraguan interests for the specific purpose of certifying Consular invoices covering jute shipments.)	

PART VI.—Foreign Consular Officers in India.—(Corrected upto 4th January, 1948.)—Contd.

Country.	Station	Designation	Name	Address
NORWAY	Bombay	Consul General	Mons. E. Leodrup.	Imperial Chambers, Wilson Road, Ballard Estate, Bombay,
	Calcutta	Consul General	Mons, S. Gylseth	
	Cochin	Vice-Consul	Mr. William Jefferies.	
PANAMA	The interests of Panama in Calcutta and Bombay are in charge of United States of America Consular Officers.			
PERU	Calcutta	Consul General	.....	(Vacant)
POLAND	Bombay	.....	.....	(Consulate General closed on 30-9-45)
	Calcutta	Consul	.....	(Vacant)
PHILLIPPINES	Madras	(Phillippine interests in India are represented by the United States of America Mission and Consular offices in India)		
PORTUGAL	Bombay	Consul	Senhor Joao Lucena	17, Coffee Parade, Colaba, Bombay.
	Calcutta	Vice-Consul Consul	Senhor A. P. J. Fernandez. (Vacant)	Mr. S. H. Tuly is carrying on the affairs of the Consulate from 22. 11. 47
	Madras.	Consul	Rev. Alberto Lopes.	
ROUMANIA	(Roumanian interests are in charge of the Consul-General for Sweden at Bombay).			

SPAIN	Bombay	Consul	Senhor Don Gonzalo Sebastian Erice Y. O. Shea.	"Oceana" 153, Marine Drive, Churchgate
	Calcutta.	Vice Consul	.....	Declamation, Bombay.
	Madras.	Vice Consul	.....	(Vacant)
SWEDEN	Bombay	Consul General	Mons. Mangus Hallenborg.	(Vacant)
	Calcutta.	Consul	Mr. N. F. Tisell	
	Madras.	Consul	Mr. B. O. Ellis.	
SWITZERLAND	Bombay	Consul General	Dr. H. A. Sonderegger.	1, "Shangri-la Commercial Road, Bombay, 22.
	Calcutta	Consul	.....	
	Cochin	Consular Agent	Mr. M. Kappelar	Manekji Wadia, Building
TRANS JORDAN	Madras	Consular Agent	Mons. F. Hofmann.	125, Esplanade Road,
	Bombay	Consul General	Mr. T. R. Tokcinar.	Bombay.
	Calcutta	Consul	Mr. L. C. Mousell	(Vacant)
UNITED STATES OF AMERICA	Bombay	Consul General	Mr. John J. Macdonald	.....
	Calcutta	Consul General	Mr. Charles H. Derry	.....
	Madras	Consul General	Mr. C. Porter Kuykendall.	.....
URUGUAYA	Calcutta	...	.....	Temporarily closed down.
	Calcutta	Vice Consul	.....	(Vacant) Bolivian Consul
	Calcutta	Vice Consul	.....	at Calcutta is in charge
VENEZUELA	Calcutta	Vice Consul		of the affairs of the
	Calcutta	Vice Consul		Consulate.
	Calcutta	Vice Consul		

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MAGANESE STEEL

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1/1A" Ingots, Bars & Rods)

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Manufactured from Electric
Steel controlled at every stage
of manufacture from raw
material to finished product.



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KAMLA TOWER, DAWNPORE.

A J. K. INDUSTRY.

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Grams :
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Phone :
West. 131

The Binani Metal Works Ltd.,

38, Strand Road, Calcutta.

Works : SHIBPORE—HOWRAH.

Acme Manufacturing Co., Ltd.

Managing Agents: Messrs. Walchand & Co., Ltd., Bombay.

Office: Construction House, Ballard Estate, Fort, Bombay.

Works: Antop Hill, P.O. Matunga, Bombay. *Telephone:*

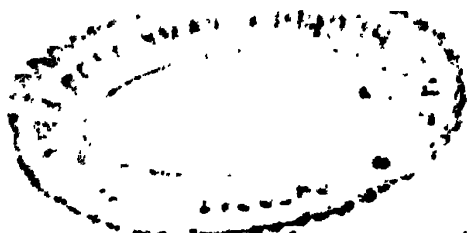
Office:—32894, *Works:*—61223, *Telegrams:* ACMERAY.

Introduction:—It is a joint stock company floated in 1920 by Mr. Mathuradas Vissanji. Originally they were engaged in the manufacture of motor car accessories only but later on they extended their activities to building-fittings also. Since 1930 they have been concentrating on three departments *viz.* Building Hardware, Railway Materials and Job Works.

Manufactures:—The building hardware department is run more or less in the same way as a tonnage factory where machinery operations and raw materials are, to a great extent, standardised and the department turns out a definite amount of work per day. Railway materials are, however, manufactured against definite orders and for almost all standard items produced by this department, special tools, jigs or machines are employed to maintain the quality of their products.

The type of fittings turned out by the building department of the Acme Works is extremely varied and includes butt hinges, parliamentary hinges, tee hinges, pivot hinges, self-acting hinges, spring hinges, casement stays, fan-light openers, handle knobs, casement fasteners, door holders, tower bolts, hooks, towel racks, cocks etc. These are made in brass, bronze, gun-metal or in stainless steel, in casting sheet metal, or extruded brass in different finishes such as, copper oxidised, bronze, silver oxidised, nickel-plated, chromium plated or spray painted according to the desire of the parties concerned.

The railway department can manufacture almost all items according to I. R. S. drawings and specifications and over and above this, as the factory has been well equipped, special designs to the individual tastes and requirements of each railway are undertaken. The scope of this section of the factory is extremely wide and items turned out include piston rods in stainless steel sleeved, brass sleeved or silveroil sleeved, swan locks, ball couplings, release valves, drip trap valves, alarm



valves, alarm operating lever gears, commode handles, locks, inter-vehicular coupling, roof light fittings, berth light, berth frame, parcel rack, roof tanks, vestibule frames, etc.

In the Job Work Department, special interior and exterior decoration work to the architect's or builder's own design is undertaken and can be executed in aluminium, brass, bronze, copper, stainless steel or any other metal or alloy according to the tastes and requirements of the party concerned. The following are a few of such job orders:—bank railing, hand rails, special door and window grills, lights, lamps and holders, letters and figures, cages and sliding door fittings, memorial and inscription plates, monograms, show window frames and other decorations.

Agarwal Hardware Works Ltd.

Managing Director: Jagannath Periwala. *Office:* 167, Chittaranjan Avenue, CALCUTTA.

This private limited company was started in 1941. They are manufacturers of various Engineering and structural items. Re-rolling, Casting, and sheet metal works are also undertaken by them.

The Company has a capital investment of about Rupees five lacs and employs 150 men in the factory.

Agarwal Iron Works

Proprietors: Messrs. Harprasad Mathuraprasad. *Office & Works:* Hewett Park Road, Near Belanganj Goods Depot, AGRA.

Theirs is a proprietary concern started in 1924.

Their present line of manufacture includes Cane Crushers, Pans, Persian wheels, levellers, Ploughs, chaff cutters, standard weights, surface boxes, wheels for wells, rammers, machinery parts, Woven wire fencing, balties, tasalas, and pans, hinges, tower bolts, containers, tin containers, bars, flats, brass and other non-ferrous articles.

There are about 100 labourers under their employ.

Agricultural Industries (Regd).

Managing Agents: Mr. L. Chanan Mall Gupta. *Office & Works:* Amritsar Road, Batala, (Pb). *Telegrams:* AGRICO.



[273]

The Company has a capital investment of Rs. 1,25,000/- employing about 70 labourers. They manufacture all kinds of agricultural implements, Cane Crushers, Weights and Measures, Machinery and various other consumer goods. They are specialists in Chaff Cutters, which is produced under their Trade Mark "Asli Toka."

They are now expanding their factory equipments with a view to increasing their capacity for the production of machinery which is so much in demand in the country and has at present mostly to be obtained from the overseas.

Ajax Products Ltd.

Managing Agents: Messrs. Murugappa & Sons. *Office:* Swastik House, P. B. 1356, 106, Armenian Street, G. T., Madras. *Works:* Tiruvottiyur (Chingleput Dt.). *Branch Office:* 14/290, Raja Street, Coimbatore. *Telephone:* Office:—4951, Works:—3243. *Telegrams:* Office:—AJAPRO.

Introduction:—Messrs. Ajax Products Ltd., were incorporated in 1939 as a Public Limited Company for the manufacture of coated abrasives of various kinds and steel furniture.

Abrasive Section.

Equipment:—The manufacturing section is equipped with the most up-to-date American machinery obtained at the excessive war-time costs. The Ajax Products Ltd., have also installed necessary plants for the manufacture of glue from hides, which is an important raw material in the manufacture of abrasives.

Manufactures:—At present they manufacture coated abrasives of all kinds such as flint (sand and glass) Garnet, Ajaxite in paper cloth rolls, shapes, belts, discs, etc. Their productive capacity is 15,000 yds. a day of 24 hours working, although at present they are working one shift of 8 hours only.

Steel Section.

Equipment:—The Steel Section is equipped with the latest up-to-date special-purpose machinery and is run under the supervision of experts assisted by technical men.

Manufactures :—Their present manufacture of steel equipments comprise Safes, Security Cabinets, Almirahs, Cash Boxes, Steel Cup-Boards, Racks, locks, Hospital Furniture, Steel Tables and Chairs etc. etc., Heavy Safe Deposit Equipment with massive strong doors (proof against explosives) and safe-deposit locket cabinets are the proudest achievements of Ajax engineering skill and workmanship.

Future Outlook :—The products of the Company both steel furniture and abrasives have made a name throughout India. The future seems to be still brighter and they hope greater development in the lines of their manufacture under postwar reconstruction schemes.

Aluminium Corporation of India Limited.

Managing Agents: Messrs. J. K. Limited. *Chairman:* Board of *Directors:* Sir Padampat Singhania, Kt., M.L.A. *Head Office:* Kamla Tower, Kanpur. *Calcutta Office:* 9, Netaji Subhas Road, Calcutta. *Works:* Jaykaynagar, Asansol. *Telephone:* Head Office: 2532, Cal. Office: Cal. 4649, Works: Asansol 482. *Telegrams:* Head Office: 'ALUMINIUM' Kanpur. Cal. Office: 'ALWORKS' Calcutta. Works: 'ALUMINIUM' Asansol.

Introduction :—This is the only Indian Aluminium Concern started by the well-known Indian Business House of Singhanias in the year 1937 as a Public Limited Company with a capital of Rs. 1,20,000. They are the first also to start extracting alumina out of Indian Bauxite by the Bayer's process.

The raw bauxite from which aluminium is produced is supplied to the factory from the Corporation's own Bauxite Mines at Ranchi about 200 miles from Asansol.

Manufactures :—The Aluminium Corporation of India manufacture alumina, electrodes and virgin aluminium ingots. They also roll aluminium into sheets and circles.

The Corporation manufactures a number of aluminous chemicals and various fancy articles and utensils,

Present Position:—The factory has got its own Causticising Plant to enable the use of soda ash and lime in place of caustic soda, if and when necessary. It has its own Paste Plant with the help of which paste is prepared from petroleum coke and pitch. This carbon paste is at present used in the manufacture of Anodes and Cathodes by the Soderberg self-baking electrolysis process. The plant is only one of its kind in this country for the manufacture of soda ash electrodes and with the help of this plant it is hoped that the Corporation would be able to produce carbon graphite and electro-thermic electrodes also. The Corporation at present manufactures 200 tons of alumina and 200 tons of aluminium each month.

The Corporation has its own colliery, railway siding and will have in the near future a full-fledged colony including its own market, residential quarters for officers and staff, supervisors and workers in the factory. It offers employment to a large number of workers numbering about 3,000. With further growth of the factory, the number of workers is expected to increase considerably.

Future Outlook:—The years of war were years of severe trial for the Corporation. It is a new and key industry which must be developed in India. With this in view the Corporation has already placed orders for the extension of Thermal Station and the setting up of an up-to-date Rolling Mill. With the installation of the new equipment the Corporation may very well hope to contribute in no small way to the rapid development of the industry in the country.

Aminchand Bholanath.

Proprietor: Seth Bholanath, *Office & Works:* Tanda Road, Jullunder City. *Branch Office:* 24/2A, College Street, Calcutta. *Telephone:* Head Office: 297. Branch Office: B.B. 993. *Telegrams:* AMINCHAND BHOLANATH.

Introduction:—Messrs. Aminchand Bholanath were established in 1905 and have a capital investment of Rs. 25,00,000/-. They are one of the important Government Contractors, General Suppliers and Tata Dealers of the Punjab.

Manufactures:—They have a wide range of manufactures such as Agricultural Implements, Water Heaters of all sorts, Steel and Wooden furniture, Iron & Brass articles, Iron safes and Brass Cocks and a variety of other civil and military requisites. They produce quality articles. Many of their Tiger Brand articles are very well known in the market. They have specialised in galvanizing, welding, and Mechanical Engineering.

Aminchand Payarelal.

Proprietors: Mr. Satya Paul, M.A. & Mr. Jit Paul, *Head Office:*
& Works: Tanda Road, Jullunder City. *Phone* 232 &
 232 A. *Show Rooms:* Chowk Sudan, Jullunder City.
Branches: (1) 101, Narayan Dhru Street, Bombay 3.
Phone: 24680. (2) 98, Netaji Subhas Road, Calcutta.
Phone: Cal. 239. (3) Chawrie Bazar, Delhi. (4) 99, Queen
 Street, Melbourne (Australia), *Phone:* M 1373/4
Telegrams: (For all places) APEEJAY.

Introduction:—This private firm was started in the year 1920 by the late Seth Payarelal.

Manufactures:—They manufacture Persian wheels and agricultural implements, water, steam, air and boiler fittings, chains, buckets, milk-cans, bolts, nuts and rivets and various sheet metal goods.

The manufacture of water fittings was taken up in 1924. Manufacture of bolts and nuts was started in 1944 when a plant with a productive capacity of 25 tons per month was set up. All their products are upto the I. S. D. standard.

The sheet metal industry constitutes quite a big part of the concern. All the processes, welding, galvanising and tinning are maintained at a very high level of efficiency.

War-time Development:—The scarcity conditions created by the war came as a boon to the firm when their products got an easy access into the market and gained popularity. The firm executed contracts of several lakhs of rupees in its various items—sheet metal industry, water and steam fittings, bolts, nuts and rivets.

Present Position:—The concern employs about 240 workers skilled and unskilled. The sheet metal industry alone has a consumption of 150 tons of steel of various categories per month. The production of bolts and nuts is 25 tons per month, whereas water and steam fittings consume about 40 tons of brass and gunmetal per month.

Future Outlook:—The firm proposes to extend its work to a sufficiently high level. With its well equipped sales organisation at its various branches it has a very bright future.

Anandram Mahadeolal.

Proprietors of: Messrs. Anand Metal & Steel Works. *Factory:* 302A, Upper Circular Road, Calcutta. *Office:* 137, Canning Street, Calcutta. *Telephone:* Cal. 6191, *Telegrams:* SOLELY.

Introduction:—Messrs. Anand Metal & Steel Works came into being in 1945, when they acquired their present factory space from the Regent Estates, with only just a handful of workers and equipment for turning out two or three steel almirahs a month.

Later Development:—Despite the fact that they were faced with all sorts of difficulties due to restriction in steel supplies, machinery and labour etc., they managed to keep their factory going, and it was only from the beginning of 1946, when they were fortunate enough to secure the services of Mr. K. D. Shroff, a well-known figure in the steel and hardware trade that expansion in the output was made possible.

Manufactures:—To-day they are in a position to manufacture on a very much larger scale, well made steel furniture such as almirahs, adjustable racks, tables, chairs, benches etc., with patent burglar proof locks of special design. Facilities also exist for the manufacture of chromium fixtures of all kinds.

Labour:—The factory employs about 50 workers, both skilled and unskilled. Some of their skilled employees possess very extensive experience in the manufacture of most up-to-date steel furniture in one of the largest factories in India.

Future Programme :—The factory has vast schemes for the future. They have already ordered for Manufacturing Plants and materials from foreign countries. As soon as they have arrived they intend to introduce various improvements in their products with a view to making them most upto date and modern.

A. R. Shining Foundry & Engineering Works.

Proprietor: L. Mohri Lal Sanon. *Office & Works:* Amritsar Road, Batala, Dist. Gurdaspur, (East Punjab). *Telephone:* 41. *Telegrams:* SHINING.

This is a proprietary firm and was established in 1945.

It manufactures machine tools and all sorts of agricultural implements such as ploughs and chaff cutters etc.

Associated Contractors, Ltd.

Office: 8, Royal Exchange Place, Calcutta. *Works:* 8, Barrackpore Trunk Road, Belghauria, 24 Parganas. *Telephone:* Cal. 6253. *Telegrams:* HAPPYHOME.

This private limited company manufactures bolts, nuts, rivets and other allied products.

The company has invested Rs. 5,00,000/- and employs 70 labourers, both skilled and unskilled.

Atta's Iron Foundry.

Managing Proprietors: Moni Lal Atta & others. *Office & Works:* 171, Grand Trunk Road, (N), Salkia, HOWRAH.

This is an old proprietary concern started in 1908. Its present capital investment is about Rs. 30,00,000, and is one of the premier Foundries in Bengal.

They manufacture Cast Iron Fans, Rain water and soil pipes and fittings, sanitary fittings, Railings, Staircase, Tube wells, steel tube furniture, tin containers, umbrella fittings, Buckets and various other engineering materials. All sorts of Ferrous and Non-Ferrous Castings, are also undertaken by them.

The firm employs about 350 workers in its factory.

Banta Singh Shamir Singh.

Proprietor: Mr. Shamir Singh. *Office & Works:* Tanda Road, Jullundur City. *Telegrams:* BANTASINGH.

Messrs. Banta Singh Shamir Singh came into being in 1910. They are manufacturing Milk Cans, Buckets, Pails, Washing Tubs, Pans, Mortars and Agricultural Implements.

Bagri Iron & Steel Co.

Partners: Sohanlal Bagri & Motichand Bagri. *Office:* 40/1, Shibtolla Street, Calcutta. *Works:* Bamangachi, Old Benares Road, HOWRAH.

This partnership concern was started in 1944. They are undertaking C. I. Castings especially of Rice Bowls. There are about 200 labourers working in the factory.

Batliboi & Co.

Proprietors: Seth Bhogilal Leharchand Javeri. *Head Office:* Forbes Street, Fort, Bombay. *Branches Offices:* (1) Batliboi House, Nagdevi Cross Lane, Bombay 3. (2) 3-153, Broadway, Madras. (3) 12/5-D, Variety Hall Road, Coimbatore. (4) P-34, Mission Row, Extension, Calcutta. *Telephone:* Head Office: 30007, 30008, & 30009. *Telegrams:* BATLIBOICO.

Introduction:—In the field of Machinery and Machine Tools the pride of place easily goes to Batliboi & Co., which was founded by Mr. Jehangir Framji Batliboi in 1892. For many years in its initial career, the main business of the firm was the Hornsy Oil Engines.

After ably piloting the company for well nigh 25 years, Mr. Batliboi retired from business in the year 1916, selling the concern with good will to Seth Bhogilal Laharchand Jahaveri, a Mill-owner.

The managerial charge was soon entrusted to Mr. Vadilal M. Parekh, under whose guidance and management the Company made rapid progress inspite of the many hurdles that an Indian

enterprise had to face in those days because of foreign interests. His characteristic dash bettered by high business acumen very soon developed the company into a powerful institution.

In 1925 Mr. Parekh sailed for Europe where he not only secured new agencies of many internationally reputed foundries and manufacturers, but closely studied their methods of business management and sales organisation. Since then Mr. Parekh went abroad many a time and expanded the sphere of Batliboi by new additions of a wide variety of Agencies.

Activities :--To-day the Company handles many important Agencies of most of the world renowned manufacturers and has numerous distributive arrangements throughout the country. In the principal Indian Cities of Calcutta, Delhi, Madras and Coimbatore the Firm has its branch offices holding a wide variety of stocks of Machine Tools and allied machinery. Workshop machinery is the special business of this firm, but it deals also in several items not strictly falling within the Engineering and Machinery lines through their import Export Dept. They have established an Electrical Dept. also which deals in Electric Motors, Generators, Transformer and other noted Electrical Equipments.

During recent years, along with Mr. Parekh the motivating and driving force behind the firm has been Seth Bhogilal's eldest son, Mr. Pratap Bhogilal. Well educated and widely travelled, suave and pleasant mannered, Mr. Pratap Bhogilal is scientific minded, and believes in hard work to be the means to all ends. Apart from unfailing interest in BATLIBOI & Co., Mr. Pratap Bhogilal handles other prominent concerns with the characteristic zeal and devotion of an expansionist businessman. His extensive continental tours like Mr. Parek's resulted in securing main sole Agencies of internationally famous Machine Tool Manufacturers. To day the firm is Sole Agent for the Machine Tools manufactured by the member firms of Messrs. The Czechoslovakian Metal & Engineering Works, which has in its fold factories including SKODA, VOLMAN, ZBROJOVKA,

KAMINCEK etc. Among the other prominent **Sole Agencies** handled by the Company may be mentioned those of **Dayton Rubber Manufacturing Co.**, for V-Ropes and Textile Rubber Cots etc. **Harnischfeger Corp.**, makers of the famous **P & H** Electrodes, Generators, Electric Hoists etc., **Walker Turner** Machines for wood-working Home Craft; **Goulds Water System** etc; the famous Indian Machine Tools of the **Mysore Kirloskar Ltd.**, and the **Barber Colman Co.**, makers of Automatic Spools and Superspeed Weavers.

Conclusion :—The firm of **BATLIBOI & CO.**, can tackle all sorts of water supply problems too. At the time of Tripuri Congress in 1939, the arrangements of Water-Supply were entrusted to this Firm. It must, therefore, be said to their credit that they not only did the job well and to the satisfaction of the Congress High Command, but did it gratis. This testifies to the high sense of patriotism which motivates the men at the helm of affairs of **BATLIBOI & CO.**

It must also be emphasized here in conclusion that into the employ of the Company is a Czechoslovakian technical expert whose services are kept at the disposal of the Company's clients in consultative capacity and for guidance.

Bengal Belting Works Ltd.

Managing Agents: Messrs. S. K. Roy & Co., Ltd., *Office:* 2, Dalhousie Square East, Calcutta. *Works:* 25, Bosepara Lane, Pahesh Po., Rishra, Dist. Hooghly. *Telephone:* Office: Calcutta. 5569, Works: Serampur 327, *Telegrams:* BEBELWOR.

Introduction :—The Bengal Belting Works Ltd., which was incorporated in 1926, should be regarded as the pioneer in the field of Belting Industry. This company was started in 1926 as a private limited company and in the same year was converted into a Public Limited Company with a capital of three lakhs of rupees.

The new factory was erected in the weaving centre of Hooghly.

Difficulties:—For some time the Company had to face considerable difficulty in competing with foreign manufacturers particularly Japanese but it soon started the manufacture of Hose Pipes for street watering purposes which helped it to a great extent in keeping it alive.

War-time Development:—The war of 1939 came as a boon to the industry. With the progressive decline in foreign imports, the Pengal Belting Works gradually acquired the position of the principal manufacturers of beltings and hoses in this country. Five years of war proved to be a period of uninterrupted development to the Company which starting with 12 belting looms has now in possession 70 looms with other auxiliary machines.

In 1941, the Company installed its own plant for the manufacture of Cotton Yarn which is expected to meet 50% of the requirements of the factory. To finance this expansion the Company raised its capital to Rs. 6,60,000.

Present Position:—The production of the Company which was 23,09,069 inch ft. of 127 tons in 1940-41 rose to 76,99,016 inch ft. of 427 tons in 1943-44. It has now more than 500 workers in its employ. The variety of products manufactured by the Company include:

- (1) Canvas Belting. (2) Composition Belting. (3) Hair Belting. (4) Conveyor Belting. (5) Rubber Belting for Train Lighting purposes (made from cotton with rubber coating). (6) Listing. (7) Tape-measurers. (8) Web-dröbs. (9) Parachute Tapes. (10) Canvas Hoses and (11) Rubberised Canvas hoses for fire-fighting.

The railways are big purchasers of their rubber and bituminous beltings for train lighting purposes. Their hoses are used by Municipalities. Government purchased huge quantities of fire hoses for military requirements and also various kinds of beltings for munition factories during the war.

Their products are also exported to Middle East, and Russia. Before the war, they had a brisk business with Burma, Indo-China, Malaya and the East Indies.

Future Programme:—There is unlimited scope for the industry. Rationalisation which is already underway has to begin with the production of raw materials in the first instance. The Bengal Belting Works have already installed their own spinning plant and are on the move for the erection of a wool-spinning plant. Cotton can be easily procured in the country and so also wool of the finest quality. Flax can also be grown locally. The Bengal Belting Works Ltd., made an experiment in flax growing at Magra in the district of Hooghly and the experiment was a great success. Flax grown there was in no way inferior to Irish Flax. If suitable machinery can be procured for the scutching of flax-fibre and spinning yarn from the same, extensive cultivation of the crop can be undertaken.

With the expected post-war industrial development of India, the demand for belting will increase and the belting industry scientifically organised and rationalised will be a valuable asset to the country.

Bengal Electric Lamp Works Ltd.

Managing Director: Mr. H. K. Roy *Office:* 7, Hastings Street, Calcutta. *Works:* 126, Mollapara Road, Jadavpur, 24-Parganas. *Telephone:* Office: Cal. 6384. Works: PK 182, *Telegrams:* BELAMP, Calcutta.

It was started only sixteen years back in 1932, as a small undertaking more in a missionary spirit of sacrifice by a small but determined band of workers. The Bengal Electric Lamp Works Ltd., boldly launched into the difficult field of pioneering in a highly technical industry which had at that time in India very powerful foreign rivals of international reputation with a strong hold on the Indian market firmly established for decades past.

The Bengal Company had to carry on researches untiringly and to improve the quality of its products constantly to keep abreast with the best imported foreign lamps.

That the Bengal Lamp Co., Ltd., has captured the street lighting of Calcutta and Madras and has also spread into hundreds of other Municipalities, Panchayats, Government and Public Institutions, all over India, is due to its constant anxiety to keep its standard steadily high throughout.

Bengal Metal Works Ltd.

Managing Director: Mr. P. M. Mehta, *Office:* 117-B, Chittaranjan Avenue, South Calcutta, *Works:* 182, Naskarpara Road, Howrah, *Telephone:* Office B.B. 4645, *Works:* Howrah: 406, *Telegrams:* BRASSMOULD.

The Bengal Metal Works Ltd., was incorporated in 1934. After surmounting considerable difficulties it is now an established and successful concern.

Present Position:—They manufacture metal products, utensils for domestic and commercial purposes such as, Balti, Lotah, Tiffin Carrier, Karai, Saucers, etc. They have a productive capacity of about 30 tons of finished products per month. They employ on an average about 125 workers.

Future Outlook:—The management hope for a bright future. In the post-war period the Company has definitely a position as a specialised manufacturer of brass and other metal products.

Bengal Rolling Mills Ltd.

Office: 86B, Netaji Subhas Road, *Works:* 5, Lilloah Station Road, HOWRAH.

They started in 1941 as a public limited company. They are one of the leading re-rolling concerns of Bengal.

Bhandari Iron & Steel Co.

Proprietors: Messrs. Nandlal Bhandari & Sons. *Office & Works:* 9, Silnath Camp, Indore, C. I.

The Company was started in 1931. They produce Oil Expellers, Oil Filters, Rotary Oil Mills, Bandsaw Machines, Chaff Cutters, Sugar Cane Crushers, Sugar Centrifugal Machines,

Silver Wire or Sheet Rolling Mills, Textile Machinery Parts, Agricultural Implements, Railings, Stair Cases, Cinema Chair legs, Garden Benches, Window Grills, Gates and other General Engineering requirements for Municipalities, Water Works, P.W.D., Power Houses etc.

About 500 employees are under their employment in their factory.

Bhartia Electric Steel Co., Ltd.

Managing Agents: Messrs. Bhartia Co., Ltd., *Office:* 42, Shibtolla Street, Calcutta. *Works:* 8, Swinhoe Street, Ballygunge, Calcutta. *Telephone:* *Office:* B.B. 5772 and 1132, *Works:* P. K. 549 and 2288, *Telegrams:* STELECTRO, Calcutta.

Introduction :—The company was formed early in 1920 under the name and style of the Pioneer Electric Steel Co., by Sir Swarupchand Hukumchand & Co.

In 1928 the company was converted into a limited liability company under the name of Messrs. Hukumchand Electric Steel Co., Ltd. In 1941, the name of the company was changed to Messrs. Bhartia Electric Steel Co., Ltd.

During the first world war, railways, engineering factories, wagon builders etc., could obtain steel castings with the greatest difficulty and after endless delays. The company, therefore, came into existence in 1920 to provide a local source of supply of all kinds of steel castings such as are in regular demand by wagon builders, railways, and engineering and other industries.

In 1942 the British India Iron & Steel Co., Ltd., was amalgamated with this company. Along with other assets of the company, two rolling mills were acquired and these rolling mills provide a useful outlet for the steel ingots produced by the parent company.

Equipment :—The steel melting equipment of the factory consists of two 40 to 50 cwts, and one 100 cwt. electric steel melting furnaces manufactured by Stobie Metallurgical Construction Co. The furnaces are of the tilting type and are served by

over-head cranes. Besides the heavy melting scrap, steel turnings and borings are used in the charge in an appreciable measure..

Items of Manufacture:—The variety of steel castings which the company is producing are:—

- (a) *Railways*:—Locomotive Parts such as Axle Boxes, Motion Plates, Wheel Centres, Bogie Frame Stays, Bogie Centre Pivots, Buffers, Drag Boxes, Horn Cheecks, Rubbing Blocks, etc., etc.
- (b) *Carriage and Wagon Parts* such as Axle Boxes, Buffers, Head Stock Striking Castings, Draft Yokes, Bogie Pivots.
- (c) *Wagon Builders*:—Similar to (b) above,
- (d) *General Engineering Works*:—Bridge Bearings, Spur Wheels, Gear Wheels, Pinions, Hydraulic Cylinders, Spare Parts for Sugar and Oil Mills, Cast Steel Pipes, Bends, Elbows, Tees, Man-hole Covers, etc., etc., for Boilers.

Production:—The present production of liquid steel is nearly 1,000 tons per month of which 30% is employed in steel castings and the rest is cast in the shape of ingots. Steel can be produced to any required specification and at present the company is concentrating on the production of special steels. The capacity of the rolling mill is well over 850 tons per month.

Labour:—Messrs. Bhartia Electric Steel Co., Ltd., at present employ on an average 1,800 workers per day.

Bharat Iron & Steel Corporation.

Proprietor: Mr. Dwipen Singha. *Office:* 20, Sitanath Bose Lane, Salkia, Howrah. *Works:* 12, Gopal Ghose Lane, HOWRAH.

This private firm was started in 1946. They are manufacturing C. I. Tubewells, Hand Pumps, C. I. Filter points, Rice-mill parts, and mill sotres, Plumbing and sanitary fittings, machine parts etc.

Bharat Sheet Metal Industries.

Managing Directors: (1) Mr. S. B. Dutt, B.Sc., A.M.Ch.E. (N. C. E.) P.338, Mudiali Road, Calcutta. (2) Mr. B. C. Ghose, B.Sc. (Econ) (London) B. Com. (London) 63/1, Mahanirvan Road, Calcutta. *Office :* 52, Hindusthan Buildings, 6A, Surendra Nath Banerjee Road, Calcutta. *Works:* P.O. Ghugudange 21, Beerpara Lane, Dum Dum, (24 Parganas). *Telephone:* B.B. 4959

Manufactures:—This joint stock Company was incorporated in the year 1939 and is engaged in the manufacture of washers, stoves, cooking containers, staples, punching machines, rat-traps, steel furniture and other hollow-ware products.

They propose to take up the manufacture of Hurricane Lanterns also.

Bharat Tool Mfg., Co., Ltd.

Managing Agents: Messrs. Sankalchand G. Shah & Co. *Managing Director:* Mr. Sankalchand G. Shah, B.A., LL.B. *Office & Works:* Swastik Mill's Compound, Ferguson Road, Lower Parel, Bombay 13. *Branch Offices:* (1) 472, Mint Road, Madras. (2) 174, Harrison Road, Bhajanlal Katra, Calcutta. (3) 36, Campbell Road, Karachi. (4) Sakar Bazar, Railwappura Road, Ahmedabad. (5) Chawra Bazar, Ludhiana, Punjab. (6) Katra Ahluwalia, Amritsar. (7) The Bombay Trading Co., Outside Khanpuri Gate, Hoshiarpur. *Telegrams:* BHARATTOOL.

Manufacture:—They manufacture Small Tools such as Taps, Dies, Cutters, Wood-working Tools, Lathie Centres, Jigs, Fixtures, Gears, Pinions, Punches & Dies, Textile Machinery Spare Parts, & Automotive Parts. Mention may be made of the following particulars of their manufacture:—

1. Taps—Whitworth Standard Thread from $1/8''$ to $2''$ raising by $1/16''$.
2. Taps—British Standard Fine Thread.
3. Circular Dies—Whitworth Standard Thread.
4. Circular Cutting Dies—British Standard Fine Thread.

5. Hand Reamers, Machine Reamers, Chucking Reamers etc.
6. End Mill Cutters, Morse Taper & Straight Shank.
- 7. Slotting Cutters.
8. Side & Face Cutters.
9. Angle Cutters (Single Angle, Equal Angle, & Double Angle Etc.)
10. Concave & Convex Cutters.
11. Form Tools.
12. "T" Slot Cutters with B & S or Morse Taper Shank.
13. All kinds of Planning Knives, Moulding Cutters and Blanks, Tonguing, Tenoning, and Grooving Cutters.
14. 60° Countersink Drills.
15. Little Giant Type Dies.
16. Textile Machinery Spare Parts.
17. Automobile Parts.

Binani Metal Works Ltd.

Managing Director: Mr. G. D. Binani. *Head Office:* 38, Strand Road, Calcutta. *Factory:* Foreshore Road, Shibpur, Howrah. *Telephone:* *Head Office:* B.B. 5383, Cal. 5430. *Factory:* Howrah 1034. *Telegrams:* NONFERROUS.

Introduction :—The Non-ferrous Metal Industry in India has had a phenomenal growth during the recent war and the Binani Metal Works Ltd. played a notable part in the successful stabilisation of the industry. The Company is fortunate in having Mr. Govardhandas Binani as its Managing Director who has long experience in this line gained through the heritage of generations and whose name is closely associated with the Non-ferrous Metals trade and industry in this country.

During the war the development of the Company has been remarkable and to-day it has to its credit a well equipped factory managed by expert technical staff with foreign experience. The

Company has its own laboratory and the manufacture of the alloys is scientifically controlled. The products are of the highest standard. It employs 450 workers.

The Company also buys all kinds of Non-ferrous scrap, residues, dress, ashes, sweepings, slags, turnings, borings etc. and reconditions them into alloys of required specifications.

Manufactures :—The products include all sorts of Non-ferrous Metal alloys such as—Antifriction White metals, Tin Solders, Type-metals, Gun metals, Phosphor Bronze, Bellmetal, Brass, Aluminium alloys, Lead Bronze, Manganese Bronze, Nickel Silver etc. Orders to any specification are executed.

Further expansion of the Company is now engaging the attention of the management.

Bindeswari Iron & Steel Corporation.

Proprietor: Shri K. P. Jaiswal. *Head Office:* 77. Kailash Bose Street, Calcutta 6. *Works:* Bindeswarinagar, P.O. Barhaj, Dist. Deoria (U. P.). *Branches:* Katihar & Mahrajganj.

Introduction :—This private concern was established in the year 1938 with the sole object of catering for the needs of the consuming public in the deficit area of Barhaj, Deoria (U. P.) where the works are situated. It has a capital investment of about Rs. 1,50,000. One special feature of the firm is that it is worked on co-operative basis wherein the management and the employees stand on the same footing, the former sharing profits with the employees.

Equipment :—

*Foundry :—*Casting Iron, Brass and other metals upto 1 ton.

*Machine Shop :—*Well fitted with lathes, Drills, Gringing and Milling Machine.

*Flour Mills & Rice Mills :—*Working for wheat, Barley, plus Rice.

*Power :—*Steam.

Manufactures :—Their present line of manufacture includes Iron Pans, Spticher Sprout Head, Irrigation Pumps, Sugar Cane Crushers, Railway Carriage fittings, Weights and Measures, suitcases etc. Agricultural implements are their speciality.

Plans.

Provisions has been made for the training of unskilled labour in every department to make them earn independent livelihood specialising in a particular line.

Arrangements and negotiations have been completed to fit up a few more lathes including Capstan, shearing and gear cutting machine, wood working machines and a separate establishment for drawing, mathematical and surveying instruments.

Labour :—The management believes that future of the industry lies in improved working conditions for the labour and wants to give them every opportunity to shape their own destiny. They desire to make employee a member of the concern entitled to join the future board and share in the profits.

Amenities for labour by way of cheap rations, free medical aid, free lights, etc , are provided.

B. M. Singh & Son.

Proprietor: Mr. B. M. Singh. *Office & Works:* 1, Crooked Lane, Calcutta. *Telephone:* Cal. 1531. *Telegrams:* REFINEMENT, Calcutta.

They are working as mechanical and electrical engineers and do job work according to the requirements of the parties concerned.

Bolinjkar Metal Works Ltd.

Managing Partner: Mr. M. K. Chaphekar. *Office & Works:* Nana Chawk, Grant Road, Bombay 7. *Telephone:* 40168, *Telegram:* ALLIGATOR.

Introduction :—Messrs. Bolinjkar Metal Works are the pioneer manufacturers of Steel Belt Lacings in the country. It is a partnership concern which was started in 1942 with a capital of Rs. 12,000 with Mr. B. J. Bolinjkar and Mr. M. K.

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hammer.



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and Durability which
substantially contribute
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Phone: 40168

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BOMBAY, No. 15
Phone : 60445
Grams : STRUCTURAL

Chaphekar as the partners. Subsequently the capital was raised by another Rs. 76,000 so that the present capital investment in the works is about one lakh of rupees. Located at the port town of Bombay it has the advantage of an industrialised centre both for the availability of the raw materials required and a ready market for its finished products.

Equipment and Manufacture:—As the works came into being during the abnormal times of the war necessary equipment for it had to be obtained from manufacturers in the country. At present the manufacture of lacings is carried on with separate dies for different processes of cutting, embossing and pressing but this is soon going to be replaced by one single die for all the three processes.

Their present production of steel belt lacings has been on an average 20,000 boxes in a year although their capacity is several lakhs. In addition to the steel belt lacings Messrs. Bolinjkar Metal Works manufacture rice huller Screens, iron hinges, pant buckles and clips, mill parts and cycle accessories also.

Difficulties:—During the war the supply of raw materials was never adequate and regular; firstly because of insufficient quantity produced and secondly due to more urgent operational demands of the army for transport purposes. Besides Industry being new to the country there was a dearth of skilled labourers who had to be trained in the works itself.

Future Outlook:—The works are apprehensive of foreign competition who monopolised the market before the war and who might again make a bid to re-capture it when normal peace conditions return. The case of the industry for protection was examined by the Tariff Board which recommended an interim protection but Government could not accept the recommendation as the principal producers of steel belt lacings happened to fall in Pakistan. It has been referred back to the Tariff Board for a revised report.

Bombay Steam Navigation Co., Ltd.

Managing Agents: The Scindia Steam Navigation Co., Ltd.

Office: 100, Frere Road, Bombay 9. *Cal. Office:* 33, Netaji

Subhas Road, Calcutta. *Works:* Patent Slip, Mazagaon,

Bombay 10. *Telephone*: Bombay Office; 27543, 33204. *Works*: 46084, 46085, 46086. General Office Cal. 5840 & 5841 at Calcutta: Shipyard Dept. at Calcutta—Cal. 4107. *Telegrams*: SHEPHERD. *Branches*: Branches for shipping at (1) Ratnagiri, (2) Mormagoa, (3) Mangalore, Bhawnagar, and Karachi. These Branches have also out agencies under their jurisdiction.

Introduction:—The Bombay Steam Navigation Co., Ltd., was incorporated in the year 1906 when she took over the fleet and other properties of a private company known by the same name. The Company also purchased a small slipway at Mazagaon known as 'Viegas Patent Slip'. Excepting a slipway there was no other machinery there at that date. Workshop was gradually built up by addition of plants and machinery according to the requirements of the Company. There is no separate Capital investment for the workshop. It is at present fully equipped to carry out repairs to ships and is also equipped to build small launches up to 100 feet in length.

Activity:—The main activity of the Workshop, however, is ship-repairing.

Britannia Engineering Works & Foundry.

Managing Agents: Messrs. Tulsiram Badriprasad. *Office & Works*: 34/35, Haraganj Road, Salkia, Howrah. *Telephone*: Howrah 585, *Telegrams*: METALMART.

Introduction:—The Britannia Engineering Works & Foundry is of 30 years standing with 3 principal sections comprising Foundry, Engineering and Galvanising Workshops.

Manufactures:—All sorts of Railway, Jute Mills, Rice Mills and Government Castings—Anchors, Soleplates, Transportation Attachment Brackets, Saddles and various kinds of P. & T. Department Castings, are undertaken. Their present line of manufacture include Stay Rods, U-Backs, Stalks, Shackles, Channel Iron, Angle Iron, Shovels, Anvils, Wrench, Sanitary fittings, essential domestic utensils and various kinds of M. S. items.

Metals, Brass Strips, Copper strips, Mc. Intyre Sleeves and other kinds of Electrical goods used by P & T Department are also manufactured by them.

All sorts of galvanising work is also undertaken specially of castings made of cast iron and of iron materials which are made of mild steels.

Bubna Engineering Co.

Proprietor: Mahliam Agarwala, Esq. *Office:* 105, Cotton Street, Calcutta. *Works:* 188, Manicktolla Main Road, CALCUTTA.

The company was established in August 1943.

The company is at present a private firm which is going to be limited soon. The capital investment of the firm is approximately Rs. 2,00,000 and further investment is under the active consideration of the management.

They undertake castings of all types and manufacture small types of machine tools, drums and containers etc.

Bungo Steel Furniture Ltd.

Managing Director: Mr. R. Ghosh. *Office & Works:* 57, Diamond Harbour Road, Kidderpore, Calcutta. *Telephone:* South 302. *Telegrams:* OGNUB.

Messrs. Bungo Steel Furniture Ltd., manufacture steel furniture of all kinds like almirahs, cup-boards, steel shelving and cabinets, storage racks and safes etc.

Burjorji Pestonji & Sons, Ltd.

Proprietors of Messrs. Empress Iron & Brass Works. Office & Works: Sussex Road, Victoria Gardens, Bombay 27. *Branch Office:* Tamba Kanta, Pydhoni, Bombay. *Telephone:* Office & Works: 41016. *Telegrams:* EMPRESS.

Introduction:—The firm is entirely the result of the efforts of Mr. Burjorji Pestonji Reporter, who started as an apprentice

of the Bombay Foundry of Messrs. Sorabji Shapurji & Co. and later joined the G. I. P. Railway where his promotion to the post of Engine-Driver was at that time considered an achievement. He showed special aptitude for the Engineering line and enlarged the sphere of his activities by engaging a man to work a machine which he purchased in the year 1889, and which could still be seen at the present workshop. It gives an idea of the difficulties one had to contend with in handling a primitive machinery.

When Mr. Burjorji found himself well established he made a bid for opening this foundry of the Empress Iron & Brass Works at Grant Road on a small scale. The excellence of his workmanship soon led to its development and he was compelled to remove it within a few years' time into a larger premises at Connaught Road, Byculla, near Victoria Gardens, and a branch was opened at Abdul Rehman Street, Pydhoni. After his death in 1906 it was considerably enlarged by his sons and to-day it occupies a total area of 10,000 square yards. The firm was converted to a limited concern in 1946 under the name and style of Messrs. Burjorji Pestonji & Sons, Ltd., Proprietors of the Empress Iron & Brass Works.

Equipment :—The workshop is equipped with all necessary modern machinery driven by two 75 H.P. Electric Motors.

Present Position :—Different departments such as Machine Shop, Foundry, Boiler Shop Pattern Maker and Smithy are under the direct supervision of one of the proprietors who specialises in its management. The firm has been awarded Gold and Silver Medals at Gujrat and Bombay Exhibitions for Textile Machinery Parts etc. and is on the list of the Government Controller of Stores, Municipalities, Railways and other Public Bodies as approved contractors.

The concern employs 138 skilled and 34 unskilled workers.

Manufactures :—The firm manufactures Textile Mills Machinery and Spare Parts, C. I. Pipes and fittings, Cast Iron & Gun Metal Castings, Machine Cut Wheels, Fire Proof Doors, Jigger Machines, Dye Vats, Railings, Structural & Welding

Works. The manufacture of Textile Machinery Parts is the firm's speciality and these are supplied to Spinning and Weaving Mills in Bombay Moffusil areas.

Calcutta Electrical Mfg. Co., Ltd.

Managing Agents Messrs Jute & Gunny Brokers, Ltd.,
Office 33, Netaji Subhas Road, Calcutta. *Works* 6, Ghore
Bibi Lane, Narkeldanga, Calcutta. *Telephone Office:*
Cal—4425, 4770, 1888, *Works* B B. 4794, *Telegrams:*
Head Office GUNSHIP, Calcutta, *Works* RIENTO,
Calcutta.

Introduction:—The Calcutta Electrical Mfg. Co., Ltd., was incorporated in 1936 with Messrs Daya Ram & Sons, as Managing Agents. It commenced work in 1937, but due to unfavourable circumstances, it was not possible to achieve the results expected. In 1941, Messrs Jute & Gunny Brokers, Ltd., undertook the management of the Company. Since then the progress has been remarkable.

Present Position:—The Factory is at present producing daily a large number of fans and regulators and other electrical goods. Its fans are sold under the trade mark of "Orient." In the year 1942, the Government of India required this firm to manufacture not only fans and regulators for them, but also shells up to the bottling stage and this work has been executed with a high degree of efficiency.

Since the present Managing Agents took over the charge many new and up-to-date machines have been installed. The production has already gone up four times of what it was in 1941. To enable the Company to produce high quality goods it has engaged many foreign technicians and a large number of skilled workers.

Future Programme:—For the development and expansion of its electrical goods business, the Company has a large project under consideration. A very big plot of land has already been acquired with this end in view. A large well equipped factory designed to be the most up to-date of its kind in India, is planned to be erected there, and machines capable

of producing various types of electrical goods will be installed. The Company has also made arrangements for importing the necessary machinery from abroad for this purpose. With this expansion, the productive capacity of the concern will increase considerably, and the Company would be in a position to manufacture all sorts of electrical goods—fans, motors, motor pumps, transformers, switchgears, alternators, etc.

Calcutta Expanded Metal Mfg. Co., Ltd.

Managing Agents: Messrs. Rungta Sons Ltd., *Office:* P-16, Kalakar Street, Calcutta, *Works:* 1, Kundan Lane, Lillooah, Howrah. *Telephone:* Office B.B. 3655, Works: Howrah 742, *Telegrams:* SWAGAT.

Introduction :—The Calcutta Expanded Metal Mfg. Co., (now Limited) are the pioneers in the Expanded Metal Industry as they were the first to take up the manufacture of expanded metal. The factory started work in 1938 and has ever since been manufacturing expanded metal to B.S. Specifications. There were some initial difficulties with regard to the procurement of suitable quality of raw materials, steel for blades and skilled workers for this type of work but the efficient and able management of the firm enabled it to tide them over.

The outbreak of the war soon after their establishment came as a boon to them. Foreign sources of supply were cut off and there was a great demand for expanded metal from the Government for Defence requirements. The firm came to the assistance of the Government and put its entire production at their disposal who were so well satisfied with their products that they granted a certificate to the firm in appreciation of the services rendered by them. During this period they got every assistance from the Government in the procurement of raw materials and other things.

With the termination of the hostilities, the demands from the Government stopped, and with it stopped the assistance from the Government. This is causing them serious difficulties, for to meet the huge demands of the post-war industrial developments they still stand in need of their help till such time as normal sources of supply of raw materials are not easily available.

Future Outlook:—In the beginning the Company experienced some difficulty in competing with foreign manufacturers, but as stated above, the war removed them from the field for some time and they have been able to gain popularity. They are confident that together with the other factories engaged in the production of expanded metal they should be able to meet the entire demand of the country huge though it may be because of the various uses for which expanded metal is required.

Castings Corporation (India) Ltd.

Managing Director: Mr. S. K. Das. *Office & Works:*
45, Madhusudhan Pal Chowdhury Lane, Bantra, Howrah.
Telephone: Howrah 233, *Telegram:* RIVETBOLTS.

Introduction:—At the very outbreak of the Second World War, the present management of the Company felt the necessity of starting a Metal Casting Foundry, on a large scale on scientific lines, in the industrial area of Howrah. The construction of the factory sheds and the furnace and the erection of the plant were completed in 1943.

Activities:—The Company specialises in soft grey iron Castings of Machinery, Cork & Valves, Electric Fan bodies and other electrical fittings, Railway Signal fittings, Lamp posts etc. The weights of the Castings range from a few ounces to tons. The daily output is about 5 tons for the present but a bigger cupola has been set up to increase the production.

The quality of castings turned out gave the Company an easy access to the Defence and Civil Departments of the Government who placed heavy indents in the very first year of the Company's life.

Management:—Within these few years of its existence the Company has been lucky enough in establishing a good reputation in the local market as well as in Government Departments. This, as well as the steady progress of the Company is entirely due to the untiring efforts and enthusiasm of its Managing Director Mr. S. K. Das, under the guidance of the other Director Mr. D. K. Das of Messrs. D. K. Das & Co., Ltd.

Future Outlook:—With the cessation of hostilities the Company has taken up new schemes and for these, new lands and factory sheds are being added. The management contemplates the manufacturing of several patent products for the civil market. Moreover some expensive arrangements are underway for non-ferrous metals castings also.

Chhuttan Lal Mattu Mal.

Proprietors of Messrs. Shiva Iron & Brass Works. Proprietor:
Mr. B. D. Gupta. *Office & Works:* Chawri Bazar,
Delhi. *Branch Offices:* (1) 37, Bibijan Street, Barbhai
Mohalla, Bombay, *Telephone:* Delhi—5062, *Telegrams:*
MACHINERY, Delhi. SHIVAWORKS, Bombay.

Introduction:—The factory was established in 1920 under the name and style of the Shiva Iron & Brass Works. The original plan included the manufacture of small articles in casting of ferrous and non-ferrous metals with a limited number of machines and a small cupola of one ton capacity.

Later on, it was considered that Kolhus and machinery parts could also be manufactured. With this end in view, the cupola was enlarged to eight ton capacity and heavy duty lathes, drilling and planing machines were installed. They have now Rs. 5,00,000 invested in the firm.

Present Position:—At present they are manufacturing sugarcane crushers, shafts. W. I. split pulleys, brass plumber cocks, shaft couplings, collers, sluice valves, various types of hand presses, press plates and frames of sugar mill, and road rollers, etc. In addition to these items of manufacture they undertake huge castings in ferrous and non-ferrous metals against specified orders. They also undertake all sorts of planing, turning and milling work.

Future Plans:—Their present productive capacity is not sufficient to meet the market demand. It is, therefore, considered essential to extend the workshop and the foundry. For this purpose, the management have imported up-to-date equipment like capstan, turret lathes, milling machines, drilling machines, slotting machines etc.

They have plans to shift the factory very soon to some suitable place in U. P. When the new equipment is installed they will start the manufacture of agricultural implements, and sanitary fittings also in addition to their present line of manufactures.

Cooper Engineering Ltd.

Managing Director: Lalchand Hirachand, Esqr., *Head Office:* Construction House, Ballard Estate, Fort, Bombay. *Works:* Satara Road, (M.S.M. Rly.). *Telephone:* Bombay: 26038. *Telegrams:* COOPENG, Bombay; COOPER, Satara Road.

Introduction:—Messrs. Cooper Engineering Limited are the pioneer manufacturers of Internal Combustion Engines in India and to-day rank as the largest firm in India manufacturing Internal Combustion Engines completely in their works at Satara Road. Internal Combustion Engine manufacture was introduced in 1932 with a range of Solid Injection type Horizontal Diesel Oil Engines for Industrial purposes in sizes from 7 BHP. to 30 BHP. These Engines were of the modern Cold Starting four cycle design and were very soon in great demand for irrigation work, Electric light generation and other Industrial drives. To-day the firm's range of Industrial Diesel Oil Engines include single cylinder Horizontal, Cold starting, Solid Injection four cycle types from 8 BHP. to 64 BHP., Twin cylinder engines from 100 to 128 BHP. and four cylinder engines from 200/256 BHP. The firm also manufacture a 10/11 BHP. High Speed horizontal totally enclosed solid injection Diesel Oil Engine operating at 1000 R.P.M. The total output of the firm is to-day in the region of 1000 BHP. per month.

During World War II, Cooper Engineering Limited like most other indigenous manufacturers experienced considerable difficulties in obtaining carbon steel and alloy steels of special types. This handicap placed the firm at a great disadvantage in so far that due to this factor it was impossible for them to manufacture Diesel Oil Engines and other products up to the same standard as the imported products. The firm are however now able to obtain their requirements of special steels and it is gratifying to note that the firm have recently laid down a new

Heat Treatment Department fully equipped with most modern Electric Heat Treatment furnaces, Cyanide baths, shorter Process Flame Hardening machinery etc. To-day the firm's products compare most favourably in workmanship, quality of materials, heat treatment etc. with the imported Internal Combustion Engines and other machinery.

Cooper Engineering Ltd. are planning to extend their Machine Shops, Erecting bays and foundries to give still larger output of Diesel Oil Engines and other products.

Machine Tools :—The enterprise of Cooper Engineering Limited led to the commencement of Machine Tool manufacture in this country in the year 1937. In the beginning they introduced the manufacture of lathes and shaping machines, which found a ready market. The result was that the department manufacturing machine tools had to be developed and extended steadily. The advent of the war in 1939 gave a great fillip to the Engineering concerns throughout the world to manufacture machine tools, and consequently Messrs. Cooper Engineering were called upon to utilise their energies and resources to increase their production of various products. The Government of India found it advisable to consider the manufacture of high class machine tools in India which were so far considered impossible to manufacture in this country. The experience that Cooper Engineering Ltd. had in machine tool manufacture placed them in a very favourable position to undertake readily the manufacture of highest class machine tools. Their manufacture in this line consists of Capstan Lathes, Sliding, Surfacing and Screw Cutting Lathes, Ball Bearing Type Drilling machines etc. Their design conformed to one of the most reputed tool manufacturers in the United Kingdom. Under the exigencies of the war, designs of earlier types of shaping machine etc. had to be modified to meet the requirements and they produced machine tools of the highest standard. Their Works were organised for improved production method; a new Machine Tool Expansion Scheme Department was established for the manufacture of Machine Tools exclusively.

Textile Machinery :—In the year 1930 Messrs. Cooper Engineering Ltd. took up manufacture of Textile Looms and have since been supplying the demand of the Textile Industry in India for thousands of looms in sizes 36" to 120" width. The

looms manufactured are for plain cloth weaving. Drop Box looms for colour weaving are also available. The role of Cooper Engineering Ltd. in the manufacture of looms for Cottage Industry has been remarkable. They are one of the few concerns in India which manufacture Textile Machinery on a large scale and to a very high standard of workmanship and quality of materials.

Agricultural Implements:--The original plan of Messrs. Cooper Engineering Ltd. was the manufacture of Agricultural Implements and Machinery. For a country like India where agriculture is primary and other industries are secondary, the manufacture of agricultural machinery was considered very desirable. In the year 1940, due to constant increase in demand for their agricultural implements, it was necessary for them to carry out huge extension in their works. A new Foundry was erected and a new Pattern Shop and a new Diesel Oil Engine Assembly Department were established and the Main Machine Shop was extended.

As pointed out above, considerable extension in various departments of works have been made since its inception.

In 1939 Cooper Engineering Limited entered into an agreement with the Meehanite Metal Corporation of America whereby they became the sole licencees and manufacturers of Meehanite High Duty Irons for India, Burma and Ceylon.

High Duty Irons are now playing a very important part in U.S.A., U.K. and other countries. Experience has proved that ordinary grey iron castings of irregular properties will no longer meet the requirements of modern machinery. Cooper Engineering Ltd. are the pioneers for introduction of High Duty Iron Castings manufacture in India and already licenses for manufacture of Meehanite have been granted to the following firms—

1. Messrs. Indian Hume Pipe Co., Ltd., Wadala, Bombay.
2. Messrs. Jay Engineering Works Ltd., Calcutta.
3. Messrs. Jessop & Co., Ltd., Calcutta.
4. Messrs. Binny & Co., Ltd., Madras.

The firm now intend to grant licenses to such other factories in various parts of India as may be considered by them capable of

producing castings to the high standard laid down under the Meehanite process. The following description of Meehanite Metal is given :—

Description of Meehanite Metal :—Meehanite High Duty Iron castings have a tensile strength up to 25 tons per square inch as cast,, and are capable of being heat-treated to give 35 tons tensile strength. Meehanite Metal is the name given to a number of different grades of high Duty Irons which are in all of 21 Standard Grades each having a different combination of physical properties required for particular needs. Castings are supplied for general Engineering purposes, heat resisting, wear resisting and corrosion resisting. Their manufacture is based on strict control of the actual physical properties of the metal and the actual metallurgical structure of Meehanite castings is pre-determined in the molten metal. The structure is so controlled and regulated as to produce the physical properties required of the castings for particular service conditions. The entire process is highly scientific and is carried out under close metallurgical supervision.

Messrs. Cooper Engineering Limited have built a complete Mechanical Testing and Chemical Laboratory which is fitted up with equipment of the latest design whereby they are able to keep close control on the various grades of metal produced.

Meehanite Metal has replaced many steel castings and high class steel. Supplies of Meehanite have been made for Air Craft, Gun, and Tool manufacture, for the manufacture of railway castings and machine tools. In many cases, the life obtained from the use of Meehanite castings has exceeded even that of carbon steel.

Diesel Road Rollers :—Messrs. Cooper Engineering Limited also manufacture Diesel Engine Road Rollers. The model on which manufacture is at present being concentrated is a 6/8 ton machine being diesel driven and designed with a 3 speed and reverse gear box. The power unit is a Horizontal, Single Cylinder, four cycle, Cold Starting Cooper Diesel Oil Engine, designed specially for road roller propulsion. It is of extremely simple design, very robust in construction and develops the correct power in ratio to the weight and duty of the road roller.

The complete road roller incorporates all special features similar to those on imported machines. Meehanite Metal High Duty castings and high quality steels are incorporated where considered essential. Extra fittings such as water sprayers, pump and hose connections, winding gear, power pulleys, sacrifiers etc. can be supplied if desired. Designs are also proceeding for a 10/12 ton size machine.

Present Position :—To-day Messrs. Cooper Engineering Limited possess some of the finest types of machines which are used for the manufacture of Internal Combustion Engines, Machine tools, Textile machinery, Agricultural Implements, and Machinery etc. Most modern methods of production are employed in their Works which are fully equipped with all facilities to enable them to manufacture amongst other things the latest range of Diesel Oil Engine to standards equivalent to imported products without having the necessity of importing parts from abroad with the exception of Fuel Oil Injectors and Fuel Pumps for certain sizes of engines. All Diesel Oil Engines manufactured by the firm are subjected to exhaustive test utilising modern testing apparatus and scientific instruments before leaving their works, and engines totalling thousands of Horse Power in aggregate have been supplied for India's war requirements and Civil use.

The Machine Tools are manufactured to Grade I standard of accuracy and quality of materials as laid down by the Machine Tool Directorate, Government of India and all other products of the firm can safely be said to compare most favourably with equivalent imported products.

The firm employ approximately 2000 workers throughout the factory of which approximately 50% are skilled and semi-skilled workers. The remainder are unskilled.

Since termination of World War II the firm have been able to plan for complete electrification of the factory. A new 350 KW. direct coupled Alternator Set has been installed and a duplicate set will be laid down in the very near future. Overhead Electric travelling cranes are being fitted in various departments of the works and foundry and the firm have made plans for installing most up-to-date foundry equipment and further additions to Machine Shop and Erecting Shop plant.

Labour :—The firm's treatment of their workers is noteworthy. Living accommodation for workers and their families is provided and in all approximately 4000 persons are housed in the colony.. A general hospital and maternity home is available for employees and their families, a fully qualified Medical Officer being in charge. All facilities are granted for sports and other forms of recreation.

After trials and tribulations which a new enterprise is bound to face, Messrs. Cooper Engineering Ltd. stand out as one of the most efficient Engineering concerns in this country.

Delhi Iron Syndicate.

Managing Director: Mr. Hansraj G. Gupta. *Office & Works:* Ajmere Gate, Delhi. *Telephone:* 5065. *Telegrams:* SINDICIRON.

The firm was started in 1921. In addition to being a very big dealer in iron and steel materials, the firm has also a foundry for iron castings.

Development of Metal Industries Ltd.

Managing Agents: Shah Bros. *Office:* 29, Clive Street, Calcutta.
Works: 72/1, Lansdown Road, Bhowanipur, Calcutta.

The Development of Metal Industries Ltd., was started in 1944 as a Private Limited Company and Manufactures Light Castings, Metal Fittings, Small Tools, Metal Stampings, and Pressings etc.

Dhiraj Pen Mfg. Co., Ltd.

Managing Director: Mr. Vallabhadas J. Shanghvi, *Office:* 75, Shamsset Street, Bombay 2. *Works:* (1) Kasturchand Mill Compound, Dadar, (B. B. & C. I.) Bombay 14, (2) Andheri. *Telegrams:* 'CITYPEN' Bombay.

Introduction :—The Company was established by Mr. V. J. Shanghvi in 1942 with the object of manufacturing fountain pens and spare parts. The war was in full swing and the required machinery could not be imported from abroad.

Technicians and raw materials were also difficult to obtain. The factory was, therefore, equipped with indigenous machines and the work was started with such workmen and materials as were available indigenously.

Manufacture:—Three varieties of pens viz. Baby size, Big size and Self Filler were introduced into the market under 'Metro' brand and in different colours. Their products received very good response and they were encouraged to employ more men and machines in their works to increase their production.

At present they are manufacturing over 2,000 doz pens and spare parts per month although this gives no indication of their productive capacity which is not being fully employed on account of scarcity of raw materials.

The Company has appointed Messrs. Kiron & Company of 73-75, Chhipi Chawl, Bombay 2, as their sole distributors for India. Their articles are already selling in the Ceylon market and orders and enquiries received from Africa, Burma, Iran and Iraq may soon result in the export of their articles to these countries also.

Present Position:—The Company has now two factories one at Dadar and the other at Andheri. In one of these factories they have plants for the manufacture of all varieties of Fountain Pen clips and Nibs.

Future Plans:—They have a scheme to instal an additional plant for the manufacture of Jewelleries like Rolled Gold buttons and chains etc. The firm has further opened negotiations with some U. K. and the U. S. A. firms for the supply of latest types of machines for the manufacture of low and high grade Fountain Pens.

Labour:—At present there are 400 to 600 workers in both the factories.

Future Outlook:—Their aim is to continue to improve the standard of their articles so as to bring it on a par with high grade fountain pens. This firm is also taking up the manufacture of raw materials like Celluloid, Xylonite, Plastics and Ebonite etc. as allied products.

D. K. Das & Co., Ltd.

Proprietors of Messrs. Bantra Engineering Works

Managing Director: Sri D. K. Das, M.A. *Office & Works:*
233, Belilios Road, Howrah. *City Office:* 84A, Netaji
Subhas Road, Calcutta. *Telephone:* Howrah 970 & 971.
Telegrams: MONIMA.

Introduction:—Messrs. D. K. Das & Co. was started in 1917 by the late Aviator Mr. Binoy Kumar Das.

When the Great War was drawing to a close and there was a scarcity of imported articles, the late Mr. Das with his brother Mr. D. K. Das started the Bantra Engineering Works and began manufacturing STEAM & WATER COCKS and VALVES, Power Transmission fittings etc. These were in demand in increasing numbers on account of their nice finish.

In 1922, the late Mr. B. K. Das went to England to visit factories and to see their working.

Later Developments:—Messrs. D. K. Das & Co., the firm of proprietors, in the meantime were enlisted as a supplier to E. N. Railway for Telegraph Pole fittings and a few other articles. On account of the quality and finish of their products, they were entrusted with more important jobs such as Carriage and Wagon Body and Lavatory fittings, permanent Way materials etc. In 1927, E. N. Railway passed on to them contracts of greater responsibility such as Loco Duplicate parts—Axle Bearings, Connecting Rod Bushes, Slide Valves, Eccentric Staps, Boiler Mountings, etc. D. K. Das & Co. were the first Indian concern to be entrusted with such contracts.

The reputation thus gained gave the firm an easy access to other railways like the E. I. Railway, E. B. Railway (B. A. Rly.), N. W. Railway, Burma Railways and the Indian Stores Department. They turned out more important works such as Signaling and Inter-locking materials. Since then they have been recognised by these railways and by the I. S. D. as one of their first class Contractors. They are now on the approved list of Suppliers to the Corporation of Calcutta also.

Other Manufactures :—Besides supplying railway materials Bantra Engineering Works help the growth of small industries by making and supplying Industrial Machinery.

With the growth of activities the firm of Messrs. D. K. Dass & Co. was converted into a limited liability Company in 1938 with Mr. D. K. Das as Managing Director and Mr. P. K. Das as Director.

In 1938 Mr. D. K. Das went out to U. K. to purchase some up-to-date machinery for the workshop. He also secured Sole Agencies of some High Class Engineer's tools and stores.

During the last world war the workshop was busy making various war materials of which special mention may be made of Armoured Vehicle parts, Lorry Filter Equipments, Hooks and Shackles for lifting tackles, Injector and Ejector Cones for locomotive and so on.

After the war the Company have reverted to their peace-time jobs :—

1. VALVES & COCKS *for Steam, Water and Gas.*

- (a) Sluice Valves,
- (b) Stop Valves,
- (c) G. M. & C. I. Plug Cocks, Gland Cocks etc.
- (d) Relief Valves,
- (e) Reducing Valves,
- (f) Release Valves,
- (g) Safety Valves.

2. POWER TRANSMISSION APPLIANCES.

- (a) Pulleys C. I. & W. I.
- (b) Plummer Blocks.
- (c) Shaft Couplings.
- (d) Bright Shaftings.
- (e) Wall Boxes & Brackets etc.

3. RAILWAY LOCO, CARRIAGE, and WAGON
DUPLICATE PARTS.

- (a) Axle Bearings.
- (b) Connecting Rod Bushes.

- (c) Injector Cones.
- (d) Slide Valves.
- (e) Boiler Mountings,
- (f) Carriage Lavatory Cocks.
- (g) Carriage Body fittings, Door Hinges, Handles, Locks, Berth & Seat Frames, Ventilators etc.
- (h) Wagon Fittings—Brake Racks, Axle Guards, Pin & Chain, Door Cotters, Hinges, Lashing Chains, Hooks, Shackles, etc.

4. RAILWAY SIGNALLING AND INTERLOCKING MATERIALS.

- (a) Locking Boxes, Keys, etc.
- (b) Semaphore Spectacles, Bearings etc.
- (c) Wire Pulley, Brackets, Thimbles.
- (d) Cranks, Stretcher Bars, Counter-weight lever etc.
- (e) Detector Units.
- (f) Mechanism Switch & Locks Movements etc.

5. RAILWAY PERMANENT WAY MATERIALS.

6. TELEGRAPH POLE FITTINGS.

7. MILL MACHINE PARTS.

- (1) Sugar Mill—Crusher Bearing, Crusher Couplings, Filter Press Plates, Frames & Cocks, C. I. Pipes & Specials, M. S. Cane & Intermediate Carrier Slats; Carrier Chains, Sulphur Burners, Sulphur Valves, Gate Valves, Pump Bodies (both C. I. & G. M.) etc. etc.

- (2) Jute Mill—Pinions of all descriptions, Pressing Rollers, Retaining Rollers, Picking Shafts etc. etc.

8. SMALL INDUSTRIAL MACHINERY.

9. SHEET METAL ARTICLES.

D. N. Singha & Co.

Proprietor: D. N. Singha. *Office:* 34A, Badur Bagan Street, Calcutta. *Works:* 61, Sitanath Bose Lane, Salkia, Howrah. *Telephone:* Howrah 348.

Introduction:—Messrs. D. N. Singha & Co., was started in the year 1905 with only one small cupola for castings. Gradually they started a machine shop and began to supply mechanical goods *c.g.*, C. I. Pans used by agriculturists, plumbing and sanitary fittings.

Manufactures:—They are manufacturers of the following:—

Water supply fittings:—Cast Iron Rainwater and Soil pipes and fittings, Air cocks, Ball valves, Bib Cocks, Bib taps Surface boxes, Ferrule boxes, Ferrule cocks, foot valve, Pushes cocks, Steam cocks, Stop cocks, Waste-not valve, Wheel valve, Shower roses brass, Iron bedstead and fittings, Sluice valve caps, Check valve, Clips pipes, Gully traps, Inspection cover, Manhole cover, Gratings.

Steel Work:—Steel tanks, Cranes, Haulage gear tanks, Iron tanks, Cisterns, Ordinary tanks of all types, Water lorries tanks, Signal post and Brackets, *Fabrication of light structure*, steel gate, spiral stair-cases.

Electrical:—Plugs and Sockets, Bracket for external lighting fixture, Clips, Clamps for pole, earth—Post and Telegraph line materials, *i.e.* socket for poles, sole plates for poles.

Pumping plant:—Lift and force pump, Rotary and Semi rotary pump, Tubewell pumps.

Tools:—Punches, Grinding wheels, vices, Travelling wheels, Stand for vices.

Nuts & Bolts:—Manufacture of M. S. and non-ferrous metal Nuts and Bolts, Rivets, Washers, Fish Plates, Dog-spikes, Tie bars, Hammer, Hooks, Axes, Shovels, Rammer and Kodalies.

Their capacity of production is about 20 tons a day and they employ on an average about 200 workers.

Future Outlook:—Before the war Messrs. D. N. Singha & Co., were manufacturing primarily for the civilian market but during the war they had considerably diverted their production to meet the war demand in different spheres. They are first-class manufacturers of sanitary requirements in the country, to which they are reverting back again.

Dukhinaswar Sarker & Bros. Ltd.

Office: 2, Maharshi Debendra Road, Calcutta. *Works:* (1) 2C, Nandan Bagan Street, Calcutta, (2) 2, Maharshi Debendra Road, Calcutta.

Introduction:—The Company was started as a private firm in 1927 and in 1946 it was converted into a private limited company with a capital of Rs. 10,00,000.

Manufactures:—They manufacture Food Containers, Steel Packing Drums Suitcase Toys, etc. Construction of Buildings, Roads, Water Works, Underground Drainages, Sanitary Works etc. are also undertaken by the Company.

Duston Engineering Corporation Ltd.

Managing Agents: Messrs. Subol Dutt & Sons Ltd. *Office:* 4, Clive Ghat Street, Calcutta. *Works:* 5, Mohindra Chandra Garden Road, Ghugudanga, 24 Parganas.

This private limited Company was established on the eve of the war in 1939 and is located in Dum Dum near Calcutta. They are engaged in the manufacture of Tools and Small Machinery.

East India Steel Works Ltd.

Managing Director: Mr. K. P. Mukherjee. *Office:* 14, Netaji Subhas Road, Calcutta. *Works:* 74, Hari Mohan Bose Road, Howrah. *Telegrams:* KAPIEM.

Introduction:—Originally established as a proprietary concern in 1943, the Company was converted into a public

limited one in 1947 with Mr. K. P. Mukherjee as its Managing Director and is making rapid progress.

Manufactures:—At present they manufacture Fireproof Steel Safes, Almirahs, Filing Cabinets, Shelving Racks, Cash Boxes, Coffers, Strong Room Doors, Window Sashes, etc. and building of wagons and conduit pipes is under their contemplation.

Electric Construction & Equipment Co. Ltd.

Chairman: Mr. Lakhiprasad Shah. *Managing Agents:* Lakhiprasad Loknath & Co. *Office:* 35, Chittaranjan Avenue, Calcutta. *Works:* (1) 51/1 & 51/2, Hazra Road, Ballygunge, Calcutta. (2) Parel Road, Byculla, Bombay. *Branches:* (1) 265, Kalvadevi Road, Post Box 2338, Bombay. (2) 27, Tholasingham Street, Sowcarpet, Madras. *Telephone:* Office: Cal. 1540 & 4924 Works: Pk. 1514. *Telegrams:* ECELICO.

Introduction:—On the 1st of July, 1944 Messrs. Lakhiprasad Loknath & Co. obtained from the Custodian of Enemy Property for British India the lease of the workshop of the well-known German firm of Siemens (India) Ltd. Even at that stage this workshop was considered to be one of the best electrical workshops in Calcutta. On the 13th June, 1945, the Electric Construction & Equipment Co., Ltd. was registered as a Public Limited Company and took over the operation of Siemens' workshop. This workshop was purchased by the Company from the Government of India on the 1st November, 1947.

The Company have a factory at Bombay also for the manufacture of lift cages and connected structures.

The capital investment at present amounts to approximately Rupees 10 lakhs.

Equipment:—The Calcutta factory has its own foundry, well equipped machine shop and full testing facilities. It has also been well known for its meter repairing and testing departments. The original machine shop of Siemens (India) Ltd. has been considerably expanded by the present owners to cope with the increased range of manufactures undertaken by them.

The equipment of the Bombay factory includes machinery for workshop sheet metal.

Manufactures :—During the War the Calcutta factory was utilised almost exclusively for work of national importance placed with it by the D.G.M.P., R.A.F. and Naval office. From 1946 the Company launched upon a programme of manufacture of electric pumping sets, electric motors, starters, switchgear, switchboard and transformers.

The Company are sole agents for Schindler Lifts and manufacture in Bombay about half the total material required for the installation of a lift under the supervision of an expert trained in Schindler's Swiss works.

Future Outlook :—With the increased capacity now available in the factory, the Company are working on the large scale production of electric motors upto 30 H. P. and centrifugal pumping sets. They also hope, as soon as the difficulties in obtaining raw material have been overcome, to manufacture distribution transformers up to 150 KVA capacity and high tension voltages up to 11 KV. There is no reason why, in a few years time, India should not be self-supporting and even export electrical machineries and plant, a large portion of which has in the past been imported.

Engineering Works of India, Limited.

Managing Director: Mr. G. K. Gidwani. *Office:* 96, Chowringhee Square, Calcutta. *Works:* 20, Ultadanga Road, Calcutta, 98, Raja Dinendra Street, Calcutta, and 224, Grand Trunk Road (North) Howrah. *Telephone:* Managing Director's Residence: S. 589. Head Office: Cal. 3055 Works: B.B. 4534. *Telegrams:* ENGWORK Calcutta.

Though the manufacture of Electric fans was successfully carried on in India even before the world war II the production was very much less than the requirements which was however, low at that time. When war broke out and import of fans stopped practically and the Government demands also rose to huge proportions the existing manufacturers could not meet even

the Government demand and the time was appropriate for new firms to enter the field of Electrical Fans production.

Dozens of firms started fan production at this time but many could not stand the rigours of the Government specifications and the more rigorous tests of the market and consuming public and stopped production. A few firms have come out successful from these ordeals and the Engineering Works of India Ltd. was one to come out with flying colours.

Started in 1943 the Company has achieved success after success and to-day it stands first among the fan manufacturers in quality though second in the quantity of production. It has on its cards expansion of production of ceiling fans. Pedestal fans have almost started in production and table fans, fractional horse-power motors and electrical switches will be an accomplished fact before long.

The Industry is handicapped because most of its raw materials viz. winding wire, ball bearings and insulating materials have to be imported and silicon sheet production in India is not adequate.

With the coming into its own of Electricity in India and the vast schemes of harnessing the turbulent rivers of India and the consequent rising standard of living in the country the future of the Electrical Engineering Industry is indeed bright. But planning of our National economy should be balanced if its results are to endure and steps should be taken immediately to make this Industry self-sufficient in its Raw Materials.

Firestone Tyre & Rubber Co., of India, Ltd.

Office & Works: Hay Bunder Road, Sewree, Bombay.

Branches: (1) 1-A, Sydney Road, Bangalore. (2) Swadeshi Mills Estate, New Queen's Road, Bombay. (3) 28, Central Avenue, Calcutta. (4) 9, Hunupitiya Lake Road, Slave Island, Colombo. (5) Hasan Building, Nicholson Road, Delhi. (6) Badri Building, Meleod Road, Karachi. (7) 53, The Mall, Lahore. (8) 1, Cawnpore Road, Charbagh, Lucknow. (9) 159, Mount Road, Madras. (10) Khalasi

Lines, Nagpur. (11) Central Tyre Depot, National Bank Building, Phayre Street, Rangoon. *Telephone:* Office: 46005/6/7/8/9. Bangalore Branch: 214. Cantt. Bombay Branch: 21758. Calcutta Branch: B.B. 6368. Colombo Branch: 4187. Delhi Branch: 5425. Karachi Branch: 3107. Lahore Branch: 3127. Lucknow Branch: 834 Extension. Madras Branch: 86331. *Telegrams:* FIRESTONE, Bombay (Office), Bangalore, Calcutta, Colombo, Delhi, Karachi, Lahore, Lucknow, Madras, Nagpur. FIRETYRES, Bombay (Branch). TYRES, Rangoon.

Messrs. Firestone Tyre & Rubber Co. of India, Ltd. is a premier tyre and tube producing concern in India. They manufacture a wide range of tyres for the following types of equipment and service:—

1. Agricultural Tractors and Implements.
2. Aircraft.
3. Earth movers and haulers.
4. Road Building Equipment.
5. Industrial Tractors and Implements.
6. Animal-drawn Vehicles.
7. Trailers.
8. Cranes.
9. Excavators.
10. Dumpers.
11. Shovels.
12. Portable Machinery and Equipment.
13. Solid tyre vehicles.

They also produce a select line of motor parts, accessories, tyre repair materials, and hard rubber battery boxes.

The company has about 1,200 workers under its employ.

F. N. Gooptu & Co.

Managing Partners: Sri Rama Prosad Gooptu, B.Sc., Rtn. H. P. Gooptu, B.Sc., Late Hony. Magistrate, First Class, and

Dr. A. P. Gooptu, M.B., D.T.M. *Officer & Factory:*
12, Beliaghata Road, Calcutta. *Telephone:* Entally 2188.

Introduction :—Messrs. F. N. Gooptu & Co. came into existence about fifty years ago in 1905 when the boycott movement induced by the Bengal Partition movement inspired a pre-disposition for goods made in India. Urged by this feeling of nationalism, Mr. F. N. Gooptu, in laying the foundation of the firm for the manufacture of stationery such as pen, pen-holders, nibs and pencils etc., also laid open to himself the domain of business for which, as subsequent events had shown, nature it seems had specially talented him. His arduous zeal and steadfast perseverance soon brought his firm into the limelight and he succeeded in securing huge programmes from the Government, Civil & Military Department which was a thing of no small consequence looking at the set up of things then existing. His Excellency Lord Carmichael, the then Governor of Bengal, also graced the firm by his visit in the year 1916. Five years later in 1910 the factory was shifted to its present site from 5, Middleton Street, Calcutta, where it was originally situated. when the 1st Great War broke out the firm was transformed into a Munition Board for the production and supply of war material which was undertaken by the firm under the personal and strict supervision of Mr. F. N. Gooptu. His services were appreciated both by the Government and the public. The Government invited him to give evidence before the Industrial Commission and conferred on him the title of Rai Sahib and subsequently that of Rai Bahadur. In 1925 Mahatma Gandhi, the Father of the Nation, also paid a visit and expressed appreciation of his drive and genius.

Present Position :—Their line of manufacture has been pen, pen holders and nibs etc. to which they have now on the return of Mr. Ram Prosad Gooptu, Mr. F. N. Gooptu's eldest son, from the U. K. where he had been sent to make special study of their line of manufacture, added the manufacture of fountain pens also. To-day it is indisputably acclaimed as the top-most concern in the country in the line with an investment of Rs. 10,00,000/- and has 150 workers in its employment.

Ganpatray Ramnarain & Co.

Office & Works: 243, Upper Circular Road, Calcutta.

This is a private firm started in 1928 with a capital investment of about 3 lakhs of rupees. It manufactures tin goods of every kind, drums and other sheet metal goods.

Garlick & Co.,

Proprietor: Mr. A. E. Maskati. *Office & Works:* Haines Road, Jacob Circle, Bombay 11. *Branch Offices:* (1) Cox Street, Coimbatore. (2) Yusuff Mandivwalla Building, South Napier Road, Karachi 2. (3) Resident Representatives at:— Ahmedabad, Calcutta, New Delhi. *Telephone:* 42071 (5 lines). *Telegrams:* GARLICK Bombay.

Introduction:—The Company was established as early as 1872 by an Englishman, Mr. Garlick by name. The business of the Company then consisted of selling hardware tools, mill stores and machineries and undertaking water works and structural engineering contracts. The well-known Garlick Flooring Tiles, made out of cement in various colours, stood out as an outstanding achievement in its various lines of manufacture. They were the sole patentees of Garlick Patent Stone Flooring invented by Mr. William Moir, an Engineer of the firm. After the death of Mr. Garlick the Company went into the hands of his son Mr. Christiansen. It was during his time that the Company was shifted to its present site at Haines Road, near Jacob Circle where the works now cover an area of over 22,000 square yards and its activities have been considerably widened. When in 1908, Mr. Christiansen went back to his own country the concern was taken over in joint partnership by Messrs. Ambalal Sarabhai, A. E. Maskati and G. A. Latif. This partnership continued till about 1914 when Mr. Maskat took over the whole concern and raised its capital investment from 400,000 to 30,00,000 of rupees.

Activities:—Since then the range of their activities has considerably widened and to-day they are undertaking the manufacture of the following:—

- (a) Equipments for Oil Refineries and Vegetable Factories
- (b) Spherical Rotating Digesters and other equipments for Paper and Straw Board Industries.
- (c) Kiers, Vacuum Pans, Filter Presses, High Speed Juice Heaters, Magma Pumps, Crushers, etc., for the Textile, Sugar and Soap Machineries Industries.
- (d) Fabrication and erection of Steel Bridges, Buildings, Factories, etc, etc
- (e) Road making, water-proofing, cement tiles manufacturing.
- (f) Municipal requirements, such as Hydrants, Valves, C. I. specials, watering carts, etc
- (g) Structural Works.

Labour:—The Company employs about 600 men in its various departments which comprise —

1. Foundry & Pattern Shop
2. Machine Shop.
3. Boiler & Heavy Structural Shop
4. Light Structural Shop
5. Asphalt Products & Paint Manufacturing.
6. Cement Flooring Tiles.
7. Smithy Shop.

The Foundry has 2 cupolas and can undertake castings of any nature upto 5 tons in weight.

The jobs carried out in the machine shop and structural departments are varied in nature, but the following give a general idea of the work carried out

1. Mild Steel, plain or jacketted pressure, of vacuum vessels.
2. High Pressure autoclaves such as Pulp Digesters, for Paper Mills, Boiling Kiers for Textile Mills, etc.

3. Small Autoclaves and vessels for Industrial and Scientific Research, etc.
4. Machining, and casting of gear wheels machinery parts, water works fittings and other special castings both ferrous and non-ferrous.
5. Bridges, Steel framed buildings for factories, Cinemas, etc.
6. Electric Welding of all mild steel structures and vessels under direct supervision of foreign trained Indian Experts.
7. The designing and installing of Refrigeration Equipments for all Cooling Requirements.

The Company has also an Agency Department and represents over 20 English and American and Indian Firms.

Future Plans:—Recently their Works Manager and General Manager visited U. K. and America where they have ordered out a number of Machine Tools. They have also increased their shed. With the installation of the additional equipment their activities will receive a further stimulus.

Godrej Boyce Mfg. Co., Ltd.

Managing Director: Mr. P. A. Godrej. *Office & Works:* Lalbaug, Parel, Bombay 12. *Branch Offices:* (1) 102-A, Netaji Subhas Road, Calcutta. (2) 168, Chandni Chowk, Delhi. (3) 164, Broadway, Madras. (4) Navrose Bldg., The Mall, Kanpur. (5) 1239, Abid Road, Hyderabad (Deccan). *Telephone:* Office & Works: 42047 (4 lines) Calcutta Office: Cal. 1407. *Telgrams:* GODREJSAFE.

Introduction:—The establishment of the Company dates back to the year 1896 when it was started to manufacture padlocks. Manufacture of Godrej Safes and Cabinets was taken up in 1902. A number of innovations and improvements in the design and construction of the safes have resulted in the production of fire-proof safes for which Godrej are now famous all over the country.

Manufactures :—The articles of their manufacture include Safe-cabinets, Almirahs, Steel Shelving, Shelving Cupboards, Filing and Card Cabinets, Hospital equipment, Office and Home furniture in tubes and sheets metal, and Padlocks. Most of the articles of their manufacture were introduced in the country for the first time by Godrej. Heavy safe deposit equipment with massive strong doors (proof against explosives), electric drill and hammer and oxy-acetylene cutting flame, and patented Safe-Deposit Locker Cabinets are the proudest achievements of Godrej engineering skill and workmanship. To-day no less than 24 patents stand to Godrej's credit. Almost all the Safe-Deposit Vaults—over a hundred, and comprising those of the Reserve, the Imperial and all the other big Banks, the Mint, and of Safe-Deposit companies—all over the country are Godrej. These invulnerable Vaults which withstand all modes of attack including the Oxy-Acetylene blowpipe, and the innumerable Renters Safes of the Safe-Deposits are securely on Godrej Patent Methods.

The Storage Racks and Steel Cup-boards in the new Government Secretariat Offices in New Delhi are the work of this steel equipment manufacturing Company.

Present Position :—Initially when this Company came into being it was run with barely half a dozen hands. To-day the Company employs a works force of about 2,400 and an administrative and sales staff of about 250 people spread all over India and has a sales organisation comprising two Show Rooms in Bombay, five branches and 17 agencies. They have already entered into selling agency agreements for overseas countries comprising Iran, Iraq, England, and the continent of Europe, China, Malaya, Burma and Ceylon. Their manufacture ranges from the biggest combination for massive strong room doors to the most delicate locks for jewel cases. The firm at present invests a capital of Rs. 34,50,000/-.

Future Programme :—The Company have equipped their works to take up the manufacture of tubes and conduit pipes, steel doors and windows and sashes, but the production is held up for want of steel.

The firm also intends to introduce new lines of production such as refrigerators and type-writers etc. It has proposals for its selling agencies for countries comprising Palestine and Syria, Egypt, East and West Africa and Australia.

The Company has already bought a very large area of land in the suburb of Bombay where it is proposed to shift the Works in the immediate future. A large quantity of plant and machine tools has already been ordered. It is hoped that plants for the manufacture of steel tubes, refrigerators and typewriters will ere long be set up.

Goodman & Co.

Proprietor: Mr. P. Dey. *Office:* 30, Netaji Subhas Road, Calcutta. *Works:* 44/1, Canal East Road, Manicktolla, Calcutta.

Messrs. Goodman & Co. is a proprietary concern and was established in 1921. The present line of manufacture of the company includes Drums of all descriptions, Kegs, Industrial Machineries, Steel Furniture and Safes, Buckets, Bolts, Nuts, Rivets and Washers, Tubs, Cans Watering, Cans Measuring, Tea Processing Machineries, Tawas, Pans etc.

The number of labourers employed by the Company is about 100. Capital investment is approximately Rs. 1,00,000/-.

G. T. R. CO. Ltd.

Managing Director: Mr. S. B. Sinha *Head Office & Factory:* 37, Dum Dum Road, Ghugudanga, Calcutta. *City Sales Office:* 12, Netaji Subhas Road, Calcutta. *Telephone:* Head Office & Works: Dum Dum 76. *Telegrams:* MERIDIAN Dum Dum.

Introduction:—Established in 1918 the Company was under European management till 1928 when it passed into the hands of an eminent Indian Industrialist the late Mr. R. R. Sinha and after his death to the present Managing Director Mr. S. B. Sinha.

Before the war, as Hydraulic Engineers the Company gained reputation through the length and breadth of the

country. There was considerable demand for its products from almost all important institutions in India and the Government. The country till then depended for all kinds of Water, Gas, and Steam Fittings almost entirely on outside supply. The Company successfully competed with the imported goods and established its reputation. To-day G. T. R. products find favour with the Railways.

During the War No. II the services of the G. T. R. Co. were requisitioned by the Government and the entire production was taken over by the Defence Department. Water Fittings, Petrol Fittings, Steam Fittings, in thousands were manufactured during the War period and last but not the least the Company supplied substantial quantity of electric fans and Stirrup Pumps etc. to the Defence Department.

Present Position :—At present the factory is in a position to produce 150 fans a day along with other items of production. The company diverted much of its attention during the war period to electrical side chiefly to the manufacture of electrical fractional motors, electrical fans and electric pumps etc. Besides electrical goods, the Company produced mechanical goods such as S. H. T. Valves, Parallel Slide Valves, Double Seated Clip Gate Valves etc. Among other electrical products Ceiling and Table, I. C. Switches, Brass Holders of various types etc. are important.

Future Programme :—The Company has an extensive programme for manufacturing in future Enamelled Wire, A. C. Motors, Table Fans both D. C. & A. C., various description of Switchgear etc.

Hanuman Engineering Works Ltd.

Managing Agents: Messrs. Babulall & Co., Ltd, *Managing Director:* Mr. B. L. Rajgarhia. *Office:* 5, Madan Chatterjee Lane, Calcutta. *Works:* 287, Grand Trunk Road, Salkia, Howrah. *Telephone:* Office B.B. 1364 Works: How. 620. *Telegrams:* TRIAL.

This joint stock Company was floated with an authorised capital of 25 lacs of which five lacs is already paid up.

They are manufacturers of various kinds of machines such as Lathe machine, Planing machine, Horizontal Boring machine, Printing machine, Sugar Cane Crushing machine, Hacksaw machine, Shovel, Double Headed Grinder, Oil Ghanny (Kolhu), Chaff cutter and Pans No. 1 to 6. All their products are trade marked 'HANUMAN' and are very popular in the market.

There are about 250 workers working in their factory.

Harbans Lal Malhotra & Sons Ltd.

Managing Director: Lala Harbans Lal Malhotra. *Office:* 18, Netaji Subhas Road, Calcutta. *Works:* 16, Dum Dum Road, Calcutta. *Telephone Office:* Cal. 4124 *Works:* B.B. 6618, *Telegrams:* TUBFURN.

Introduction :—The factory was started in 1941 with the object of manufacturing engineering equipment for meeting the war demand. Now it has expanded considerably and is manufacturing a number of items. The latest additions to the factory are the "Tubilite furniture" and "Chirag" lamp sections.

Manufactures :—

- (1) *Automobile.*—This section mainly deals with the repairs of automobiles and comprises of the repair lines, body-building lines, Engine re-boring lines, welding and smithy line and spray painting section. Work by this section has so far been carried out only for the Government but the section is very well equipped to deal with all sorts of civilian requirements.
- (2) *Tubular Steel Furniture.*—This is the latest addition to the workshop and is producing "TUBILITE" furniture on a mass scale. This section is equipped with the latest types of machines. Every job is very thoroughly inspected before it is released for the market.
- (3) *Hurricane Lamp.*—This section has been started very recently and it is hoped that the products will be put in the market in the near future.

(4) *Foundry (C. I.).*—Capacity 180 tons per month. This section was so far being used mainly for maintenance, but now a plan for the manufacture of Machine Tools is being worked out.

(5) *Machine Shop.*—The machine shop is well equipped with most modern machinery and is at present mainly used for the operational jobs on the manufacture items and maintenance.

(6) *Saw Mills.*—This section did tremendous work during the war and has now been switched on to Railway and Civilian work.

Hazra Engineering Works.

Managing Director: Mr. A. Hazra. *Head Office:* 13, Rani Rashmoni Road, Calcutta. *Works:* 67, Nursing Dutt Road, Howrah. *Telephone:* *Office:* Cal. 4780, *Works:* Howrah 543.

Introduction:—The firm of Messrs. Hazra Engineering Works was founded in 1942. It was started with a modest beginning and was engaged only smithy works.

Later Developments:—In December, 1942, the firm installed a few lathes grinding, drilling and shaping machines and extended the Smithy Shop and started tin smithy and iron moulding shops. The number of workers employed at this stage totalled about 60.

The firm was soon registered as an approved contractor to the Department of Supply, New Delhi. During this period the firm received large Government orders and to cope with this increasing activity the number of labourers had to be increased to about 225.

Conclusion:—The firm is a first-class contractor to the Government and has earned good repute for execution and despatch.

Hind Constructions Ltd.

Director & General Manager: Dr. A. H. Pandya. *Office:* 8, Royal Exchange Place, Calcutta. *Branch Office:* (1) 45-47 Apollo Street, Fort, Bombay. (2) Near Sadar Hospital, Pilibhit (U. P.) (3) Bombay Life Building, Conaught Circus, New Delhi. (4) Khaperkheda (near Nagpur). (5) Jeewajiganj, Lashkar, Gwalior. Also at Indore, Lonavla, Jaipur, etc. *Telephone:* Cal. 3841 *Telegrams:* HINDNIRMAN, Calcutta.

Introduction :—Messrs. Hind Constructions Ltd. have adequate financial resources to handle even big structural undertakings and have for this purpose a qualified, competent and experienced staff of engineers. They use most up-to-date methods and mechanical equipment. At present they have only a portable workshop at Uttarpara, but they propose to put up one factory shortly near Bombay, where fabrication of wagons, road and railway bridges, factory buildings, pre-fabricated houses, transmission line towers etc. will be undertaken.

Jobs :—They undertake the construction of engineering structures such as factories, bridges, dams, roads, railways, canals etc.

They also undertake engineering and architectural design work and supply necessary advice on engineering and technical problems.

Present Position :—They have wide connections both in the U. K. and the U. S. A., the benefit of which, through them, can always be available to the Government and Industry. They have branches at Delhi, Jaipur, Gwalior etc., and they propose to extend their activities to the whole of India.

Hind Cycles Ltd.

Managing Agents: Messrs. Birla Brothers Ltd. *Office:* Imperial Bank Buildings, Bank Street, Fort, Bombay. *Works:* 250, Worli, Bombay. *Branch Offices:* (1) 9, Cannought Circus, New Delhi. (2) 1A, Vansittart Row, Calcutta. *Telephone:* Office: 27046 Works: 42091 (2 lines). *Telegrams:* Works: CYCLEHIND.

Introduction :—This Company for the manufacture of cycles and cycles parts was promoted in the year 1939 under the name and style of India Cycle Ltd. which was later on changed to Hind Cycles Ltd. It was started with an authorised capital of Rs. 50 lakhs of which Rs. 15 lakhs represented subscribed and paid-up capital.

Present Position :—The factory manufactures complete bicycles of 22" and 24" which are the most popular sizes in India. The pattern is that of English Cycles like Hercules, Raleigh and B.S.A. A complete cycle has 196 parts out of which Hind Cycles are manufacturing everything except nipples and steel balls.

The number of labourers employed is between 700 and 1,000 depending upon the supply position of raw materials. Their present production is about 200 bicycles per day. The factory is being extended to double the present output. Necessary plant and machinery have been ordered and the building extension is already under way.

Future Outlook :—The Bicycle Industry has been found to be well-established and the Government granted it an interim protection under which certain facilities in the matter of imports of necessary machinery for the manufacturers were granted. Stress was laid on the need for research for which allocation of a certain sum by manufacturers was made a condition to the grant of protection.

The period of protection is terminating in March 1949 and the industry is again before the Tariff Board for re-examination. Although much headway has been made, the industry is not yet in a position to face foreign competition and needs protection for yet another 3 to five years.

So long as the present day scarcity of raw materials continues the industry is under a handicap otherwise, the vastness of the country ensures a bright future for the bi-cycle industry as a cheap means of conveyance.

Hind Machines Ltd.

Managing Director: Mr. B. S. Gupta. *Office & Factory:*
184, Jogendranath Mukherjee Road, Salkia, Howrah.
Telephone: Office: & Works: Howrah 1017, *Telegrams:*
HINDMASHIN—Howrah.

Introduction:—Hind Machines Ltd. were started in 1941 and possess, one of the most modern workshops in India to produce modern Machine Tools and Industrial Machinery.

The Company has an authorized, issued and subscribed capital of Rs. 25,00,000/- and paid-up capital of Rs. 14,50,000/-.

Manufactures:—The following are the main items of their manufacture:—

(1) *Machine Tools.*

- (a) Universal Milling Machines.
- (b) Radial Drilling Machines.
- (c) Pillar & Bench Drilling Machines.
- (d) Bolt Nut Plants.
- (e) Wood Working Machines.
- (f) Hydraulic and Mechanical Presses, etc.

All machines conform to grade I standards and are equal in quality, material and workmanship to any of the imported products.

(2) *Special Tools:*

Precision Dies, Jigs, Fixtures etc., and special tools for mass production works are manufactured by them. It may seem strange but they have been successful in manufacturing tools to the accuracy of .00005".

(3) *Structural Steel Works:*

Railway Wagons, Tanks, Haulage equipment, Cranes, Steel Work for factories, buildings, collieries, Jetties, Steel Doors and Windows, Carts of all sizes and descriptions, etc., etc.

(4) *Industrial Machinery:*

Entire plants for:

Jute Mills

Sugar Mills

Cotton Mills

Oil Mills.

(5) *Castings:*

Ferrous Castings upto 15 tons individual weight, Non-ferrous castings upto 10 cwt. individual weight, Steel Castings upto 5 tons individual weight.

Present Position:—The present monthly production of the factory is approximately 100 Nos. of average size Machine Tools, 500 tons of Structural Steel Work, 600 tons Iron Castings, 50 tons Non-ferrous Castings. Steel Castings plant is expected to start early next year when production is expected to be about 100 tons a month. They are capable of equipping entire Jute or Cotton Mill of about 5,000 Looms in a year.

The number of workers employed is about 1,000 of which 700 are skilled.

Hind Tank Mfg. Co.

Managing Director: Mr. K. T. Shah. *Office & Works:*
6th Kumbharwada Lane, Cooper's Compound, Bombay—4.
Telephone: 42429, *Telegrams:* INDUSPLANT.

Introduction:—The Hind Tank Mfg. Co., Bombay, was started in 1915 by the Late Mr. Gangadas Dayabhai Shah and Mr. Tricumdas Kuberdas on a modest scale with a capital of Rs. 5,000/-. In the beginning the machinery was worked by hand. To-day the Company has an electric power workshop with a spacious yard and engages more than 100 skilled workers.

Manufacture:—The Company principally manufactures the following:—

- (1) Water Tanks of various capacities; (2) Night-Soil Tanks, (3) Water Carts, (4) Work-shop Chimnies, (5) Oil Tanks etc.

Uptil now the Company has supplied over 2,500 tanks to various municipal bodies and the orders are daily increasing. It is creditable that no complaints have ever been received regarding the tanks supplied by this Company. Besides supplying big chimnies to various mills and workshops, the Company has also manufactured tanks from Stainless Steel for storing gases and chemicals to withstand a pressure of more than 500 lbs.

Recently the Company has added an electric welding plant. As costly materials and the best electrodes manufactured in England are used for welding, the welding work done by this Company is found to be very satisfactory. The success is also due to the fact that the welding work is done under the supervision of a highly technical expert with a precise knowledge of the correct pressure of electric power to use in welding iron sheets of different thickness etc.

The Company is supplying tanks etc. to such reputable firms as Messrs. Turner Hoare & Co., Messrs. Richardson Crudas etc. The Welding Department has also executed several orders for repairing broken parts of machinery from several mills in Bombay.

As far as possible, the Company uses Indian materials. It imports other materials of the best quality from reputed foreign firms.

Conclusion :—The Hind Tank Manufacturing Co. is one of the first class industrial plant and heavy machinery manufacturing units of the country and with its vast experience and efficient management has an assured place in the post-war industrialization scheme of the country.

Hind Screws & Metal Works.

Proprietors: (1) Mr. Ramlal, (2) Mr. Prijal. *Office & Works:*
Birla Lines, Subzimandi, Delhi. *Telephone:* 8247,
Telegrams: SCREW.

Hind Screws is a private firm started in 1944 with a capital of Rs. 1,50,000 when supply of imported screws had been entirely stopped due to war. As foreign machinery was

not available the promoters were obliged to fabricate machinery in their own workshop which, however, has been working satisfactorily. The quality and workmanship of their screws ~~has~~ been found to compare favourably with foreign screws. In addition to the screws they manufacture rivets also.

Recently they have started manufacturing Lanterns and Burners of tin and brass both, the demand for which is so great that they find it difficult to meet the entire demand particularly due to shortage of brass and tinplates.

They have plans to expand their activities further by taking up the manufacture of Hurricane Lanterns of which there is a great demand in the country.

More than a hundred men are employed in the factory.

Hindustan Abrasive.

Proprietors: Mr. D. N. Sahay, Mr. R. P. Sinha. *Office:* C/o. South Bihar Sugar Mills Ltd., Bihta (E. I. R.).
Telephone: Dinapur 30, *Telegrams:* CANESUGAR, Bihta.

Messrs. Hindustan Abrasive came into being in 1943. They are engaged in the manufacture of Sand Paper, and Sand Cloth.

Hindustan Bicycle Mfg. and Industrial Corporation Ltd.

Managing Director: Rai Bahadur Shyam Nandan Sahay.
Calcutta Office: 9, Netaji Subhas Road, Calcutta. *Works & Office:* Phulwari Shareef, Patna. *Telephone:* Office: Calcutta 5977, Patna 23, *Telegrams:* IBAGENCIES Calcutta, BIKE, Patna.

Introduction:—The Hindustan Bicycle Mfg. and Industrial Corporation Ltd. came into being in the year 1939. But the actual production started in the year 1940.

Manufacture:—They manufacture complete bicycles. The quality of the bicycles manufactured in this factory has been approved by the Government. Their productive capacity is

about 200 cycles per day which can be increased to 280 cycles with further additions to machinery and equipment. The Hindustan Bicycle, besides other parts, make spokes, nipples, and also tubings. For sometime, they supplied spokes and nipples to the Hind Cycle Works of Bombay before the latter began their manufacture. They only import free wheels chains, and steel balls.

As regards accessories for bicycles, like bells, pumps, equipment tools, tool bags, oil cans, reflectors, luggage carriers with stand, etc. they are all being manufactured by them and are approved by the Government.

Hindustan Construction Co., Ltd.

Managing Agents: Messrs. Walchand & Co., Ltd. *Head Office:* Construction House, Ballard Estate, Bombay.
Telephone: 26036, *Telegrams:* HINCON.

The Hindustan Construction Co., Ltd., is another enterprise of the famous business house of Messrs. Walchand & Co., Ltd. They work as Constructional Engineers throughout the country.

Hindustan Metal Refinery & Rolling Mills.

Proprietor: Mr. Himchand K. Shah. *Office:* 124, Mint Street, G. T. Madras. *Works:* Tondiarpet. *Telephone:* 2535, *Telegrams:* ROLLINGMILL.

This private concern was established in 1945 and is engaged in rolling and refining of metals of every description.

Hindustan Motors Ltd.

Managing Agents: Messrs. Birla Brothers Ltd., 8, Royal Exchange Place, Calcutta. *General Manager:* Sir L. P. Misra. *Registered Office:* Okha, Baroda State, Kathiawar. *Calcutta Office:* 8, Royal Exchange Place, Calcutta. *Works:* Uttarpara, Dist. Hooghly, near Calcutta. *Telephone:* Office: Calcutta 562, *Telegrams:* HIND-MOTOR, Calcutta.



'Hindustan Ten' in course of assembly



'Studebaker' Trucks coming off the assembly lines

Hindustan Motors Ltd.



**Studebaker Cars being painted under Infra-red
lights in specially constructed paint Booths.**

Hindusthan Motors Ltd.

Introduction :—Messrs. Hindustan Motors Limited¹ was registered in the year 1942 as a limited liability Company with the object of manufacturing passenger cars and trucks to make India self-sufficient in respect of its requirements of automobiles. Its authorised capital is Rs. 20,00,00,000/- and issued and paid-up capital is Rs. 5,00,00,000/-.

Activities :—To achieve the objective of building up automobile manufacturing industry as quickly as possible, the company entered into agreement for technical assistance with the Morris Motors Limited, England, and with Studebaker Export Corporation, U. S. A.

The main workshop of the company is located at Uttarpara, a suburb of Calcutta. Land was acquired for the purpose early in 1946. The Railway siding with a capacity of about 170 wagons and cables for the supply of a large quantity of electricity required for working the machinery, has already been there for over eighteen months. The main workshop was completed early this year. It has an area of approximately 4,00,000 sq. ft., with capacity of assembling 30,000 vehicles and of manufacturing 20,000 vehicles a year. Machinery, plant and equipment worth about Rs. 2,00,00,000 for manufacture of engine and other fast moving parts have been installed. This programme relates only to the first phase of manufacture. Most of the machinery ordered has either arrived or is under despatch. The rest is now being manufactured. A large number of foreign technicians have been engaged. They have completed plans for immediate production. In addition, a number of Indian engineers have been sent to England and America for higher training in automobile engineering. The total capital expenditure incurred by Hindustan Motors Ltd. will shortly be reaching Rs. 3,00,00,000/- *i.e.* more than the total capital investment of all other motor manufacturing companies in this country. Assembly of cars and trucks at the Uttarpara factory has been going on for some time.

The Company has also an assembly plant at Okha Port along the West coast of the country, with a capacity of 12 cars a day. It has been assembling "Hindustan Ten" for the last two years. Hindustan Ten is the first car to roll off the line for the Indian market.

Future Outlook:—Indications are that, with further industrialisation and growth of internal trade, construction of new roads and higher standard of living in the free India, demand for cars would go on increasing and with a view to meet the growing demand, the company is executing plans to manufacture in future ten to twelve thousand cars per annum.

Hindustan Wire & Metal Products Ltd.

Chairman of the Board of Directors: Mr. G. K. Khemka.

Managing Agents: Messrs. Associated Industrial Development Co., Ltd., "Stephen House," 4, Dalhousie Square, East, Calcutta. *Office:* "Stephen House," 4, Dalhousie Square, East, Calcutta. *Works:* Kankinarrah, E. I. Rly. *Telephone:* Office: Cal: 5660 (9 lines). Works: Bhatpara 32. *Telegrams:* "EXPAMETAL"

Introduction:—The Hindustan Wire and Metal Products Ltd. was registered in 1943 and has a paid-up capital of Rs. 15,00,000/-. This enterprise was launched by Mr. G. K. Khemka, a well-known industrialist with the object of manufacturing Expanded Metal. The plant was provided by the Government of India which they had imported from America.

Manufacture:—The plant has the capacity of manufacturing Expanded Metal to American Specification to the extent of 100 tons per month by one shift working.

Future Outlook:—On account of its varied uses it is expected that the demand for expanded metal will increase considerably in the post-war period and as such the firms engaged in the manufacture of expanded metal have an assured future.

Howrah Trading Co., Ltd.

Managing Agents: Messrs. Soorajmull Nagarmal, Calcutta.

Head Office: 8, Dalhousie Square East, Calcutta, *Factory:* 144—145, Old Ghosery Road, Howrah. *Telephone:* Office: Cal. 2875, *Factory:* Howrah 45. *Telegrams:* SOORATRADE.

Introduction:—Howrah Trading Co. Ltd., was started with two major objectives in view (1) production of textile machinery in India and (2) building of boats. Much Progress could not be made with the manufacture of textile machinery and the building of the boats on account of the sudden outbreak of the war.

War Time Activities:—During the war the work-shop was transformed into one for the manufacture of materials to meet the war demands. They have manufactured for the Supply Department to their satisfaction Jigs and Tools, Coal Tubs, Stirrup Pumps and Fire Extinguishers, Engine Stand Picket Angles, Jim Crows, Mortar Bomb Cases, Endless M. S. Chains, Wheels & Axles, Brackets, Road Roller Shells, Roller Bearing Transposition Stalks, Spindles, Plugs, Cotters, Washers, Thornily Brackets, Loom Crank Shaft, Light Pile Driver, Chainless Cutters, Saddle Struts, Pegs Pickling, Looms, Pully Blocks, M.S. Nuts, Assembly Clips, Sliding Doors, Pilt Shoe, Sigging Screws, Single Posts, Sockets, precision instruments and many more odd varieties as have emanated from time to time from the Department of Supply, Government of India under the war supply scheme or otherwise.

Future Plans:—Ever since the termination of the war they have been working towards their original objectives of establishing plants for the manufacture of textile machinery and thereby making it possible for the textile industry of the country to get its requirements in India instead of looking beyond the seas for its day to day necessities.

In the matter of boat building India still lags behind not only the maritime nations like England, Norway, U. S. A., but also other countries which have found out that the prosperity of a country depends very largely upon in-land, coastal and high sea shipping. Therefore for this purpose they want immediately to start building of boats and with that end in view large tracts of land have been acquired by them on the Hooghly to set up plants. Their workshop is very efficiently and sufficiently equipped to take up the manufacture of the machinery side of the boats. They are contemplating to proceed with this scheme without further delay.

India Ammunition Syndicate, Ltd.

Managing Director: Mr. Ajai Lal. *Office & Works:* Millerganj, Ludhiana. *Telegrams:* ENGINEERS, Ludhiana.

This private limited company was started in 1941, with a paid-up capital of Rs. 35,000/- and long term loan of Rs. 3,00,000/- from the Directors.

They are manufacturers of Oil Expellers and other machinery of various sorts.

India Cycle Mfg. Co., Ltd.

Director-in-Charge: Mr. I. C. Gupta, M.Sc., F.I.C. *Office:* 4, Clive Ghat Street, Calcutta. *Works:* 9, Tiljala Road, Calcutta. *Telephone:* Office: Cal. 6955 and 6956, Works: PK. 2235, *Telegrams:* INDCYCLE.

Introduction:—The India Cycle Mfg. Co., Ltd., was registered as a Private Limited Company in March, 1938. In October of the same year it was converted into a Public Limited Company with an authorised capital of Rs. 10,00,000.

Manufactures:—The Indian Cycle Mfg. Co., Ltd., manufacture Cycle Components and Accessories such as "INDIA" brand Bell, Lamp, Pump, Carrier, and Forks well known all over India. During the war, the factory was engaged in the production of Munitions Stores and Scientific Instruments components.

The Factory is well equipped for production of accurate Die and Sheet Metal work.

Future Outlook:—The India Cycle Mfg. Co., Ltd. is one of the three cycle manufacturing Companies in the country and has so far been engaged in the production of Components and assembling Cycles with these components.

India Electric Works Ltd.

Managing Director: Mr. B. K. Rohatgi. *Office:* Diamond Harbour Road, Behala, 24 Parganas. *Works:* (1) Diamond Harbour Road, Behala, 24 Parganas. (2) 25, South Road, Entally, Calcutta. *Branch Offices:* (1) 6, Sir Phirozeshah Mehta Road, Bombay 1. (2) Udyog Bhawan, 15/173, Civil Lines, Kanpur. (3) Brijumall Building, Behind United Commercial Bank Ltd., Chandni Chowk Delhi. (4) Chatnath Building, 19/29, Mount Road, Madras. (5) 6, Dayal Singh Mansions, The Mall Lahore. (6) Dhawalpura Kothi, Begampur, Patna, (7) 31, Dharamtolla Street, Calcutta.

Introduction:—The firm was first started under the name and style of Scientific and Electrical Instruments Mfg. Co. in 1921. Later on when in 1924 they took up the manufacture of electric fans its name was changed to the India Electric Works. They are the pioneers in the field of fan industry and had to encounter all the difficulties of a new enterprise.

Manufactures:—All the parts right from the tiniest nut to the especially curved aluminium blades are manufactured by the factory itself. In 1930 the Company was changed into a limited concern, capital investment was increased and the manufacture of all sizes of A.C. and D.C. ceiling as well as table and pedestal fans was taken up. They erected another factory at Behala in 1939. Their output has increased from 10 fans per day in 1930 to 300 fans now which are selling under a number of brands in the market of which 'India,' 'Rohtas,' 'Bharat,' 'Ranjit,' and 'Tara' are most notable. Their old factory at Entally is now engaged in the manufacture of telephone and telegraph instruments, railway signalling, interlocking apparatus pole fitting apparatus, electric kettle, electric irons, bakelite electrical fittings and fine and delicate measuring and other types of scientific instruments whereas that at Behala is manufacturing fans only.

Labour:—There are about 2,000 workers in both their factories.

Research Department:—The Company maintains a Research Department where experiments by qualified technical people are always being carried on. During the war time in its Chemical Laboratory the Company experimented on the manufacture of Carbon Brush, Synthetic Paint and its recovery, Leatheroid, Empire Cloth and other insulating materials and successfully made some of them. They were successful in making and developing a very good pilot plant of modern type for Empire Cloth from which a very large quantity of this material was made for use in the manufacture of fans.

Experiments on the design of Switch gear and Starters were also made very successfully in the factory Laboratory. Other experiments are also being carried on to keep the products of the Company up-to-date.

Schemes:—The Company has decided to take up the manufacture of all sizes of Electric Motors and Dynamos, Starters, and Switch Gears, Refrigerators, Airconditioners and Transformers. The production of electric motors has already begun. In their efficiency and workmanship they compare very well with the foreign ones and provided their import from overseas is restricted, they will very soon capture the market.

India Machinery Co., Ltd.

Managing Agents: Messrs. Dass Brothers. *Office:* 29, Strand Road, Calcutta. *Works:* Dassnagar, Howrah, *Telephone:* *Office:* Cal. 3385, *Works:* Howrah 532, 565 Howrah, *Telegrams:* MARVELLOUS, Calcutta, ATLAWBIRIZ, Howrah.

Introduction:—The Company was formed generally for the purpose set out in the Memorandum of Association of the Company, and particularly with the object of acquiring and carrying on the business hitherto carried on by Messrs. Atlas Weighbridge & Engineering Co., and Messrs. Pal's Engineering Works Ltd.

The Company was registered in August, 1937 and since then has been engaged in manufacturing the following items, viz., Machine Tools e.g. Slotting Machine, Screw cutting

Lathes, Planing, Drilling, and shaping machines, Railway, Lorry Cart, Weighbridges and Platform and other Weighing Machines, Weighers; Cotton Mill Looms and Jute Mill Machinery. The Company has an up-to-date Machine-shop and a big Foundry.

The subscribed capital of the Company is at present Rs. 17,50,000/- and engages besides an efficient staff, workers numbering 800 on an average daily.

Present Position:—The Company is the only manufacturer in India of Grade I Slotting Machines and other Machine Tools and has been supplying to its utmost capacity to the Government and Industrial concerns spread all over India.

Management:—The Board of Directors consists of efficient persons well known in the country. They expect to manufacture items which were so long being imported from abroad.

Indian Clock Mfg. Co., Ltd.

Managing Agents: Messrs. Sunderdas & Sons Ltd. *Office & Works:* Sundernagar, Jamshedpur. *Telephone:* 86A
Telegrams: SUNDERDASCO.

Introduction:—The firm was started in 1941 with the object of manufacturing clocks. The industry being new to the country requiring considerable technical skill to handle precision mechanism, the Company had to take special pains to give training to the workers and make them skilled. The workshop was originally located in a rented building at Jamshedpur. With the gradual expansion of their works and activities they acquired 500 Bighas of land from the Dalbhum Raj Estate and erected their new factory at Sundernagar which they have schemes to convert soon into a modern, clean, and healthy industrial centre. The foundation stone of the Guest House was laid by no less a distinguished person than Dr. Rajendra Prasad after whom it has been named as Rajendra Bhawan.

Upto this time they have been working with automatic machines manufactured in their own factory but they are going to be replaced soon by new and up-to-date machinery imported from the U.S.A. and Switzerland.

Manufactures:—With their new equipment they will soon be manufacturing time pieces and watches in addition to the clocks. They have also taken up the manufacture of gramophone needles of various types and paper clips etc.

They also contemplate to take the manufacture of springs of various kinds besides those which would be required for the watches and clocks etc.

At present about 600 workmen are working in the factory.

Indian Commerce & Industries Co., Ltd.

Governing Director: Mr. Kowtha Suryanarayan Row. *Office:* 95, Broadway, Madras. *Works:* Messrs. Beehive Foundry Engineering Works, 95, Broadway, Madras. *Branch Offices:* (1) Kowtha Buildings, Governorpet, Bezwada. (2) Works Extensions, Ramavarapadu, via. Bezwada. *Telephone:* Office & Works: 2020. *Telegrams:* LUCKY.

Introduction:—The Company was started as an individual business concern in 1905 by its Founder Mr. Kowtha Suryanarayan Rao Pantulu, native of Kondaveedu, Guntur District, as a trading concern in Mill & Engineering Stores. The Beehive Foundry Engineering Works was founded by it in 1922 and it was made a private limited Company in 1937.

Present Position:—The concern is now equipped with a Cupola having a Capacity to melt 10 tons of Cast Iron for 4 hours, a machine Shop with lathes, Drilling, Planning, Shaping, Plate Bending, Screwing, Punching & Shearing Machines, Smithy shop, a rivet shop with 2 welding machines and a fitter shop with all necessary tools and equipment. The concern undertakes all sorts of machine repairs, structural works, fixtures for electrical overhead lines, ornamental gates, grilles,

Rice & Oil mill machinery and spare parts, Sanitary Cast Iron Special, and non-ferrous metal castings. The paid up capital of the firm is at present Rs. 2,00,000/- and it employs 150 men.

Future Outlook:—A steel melting Electric Furnace to manufacture agricultural implements, Textile mill spares and alloy steel, is now under erection.

Indian Enamel Works Ltd.,

Managing Agents: Messrs. Amritlal & Sons Ltd. *Head Office:* Great Social Building, Sir Pheroze Shah Mehta Road, Fort, Bombay. *Factory:* Kasturchand Mills Compound, Dadar, (B. B. C. I.). *Telephone:* Office: 30964, 30965, Works: 60637, *Telegrams:* OJAS, Bombay.

Manufactures:—The Indian Enamel Works Ltd., are manufacturers of high grade Enamel Iron Signs and Hollow Wares.

Indian Engineers' Corporation Ltd.

Managing Director: Mr. P. S. Kalsey (A. M. I. E. E.) (London). *Secretary:* Mr. Wassan Singh, Nijjer. *Office & Works:* Outside Chatiwind Gate, Canal Bridge, Amritsar, P. O. Box No. 8. *Telegram:* INDENGICO.

Introduction:—Messrs. Indian Engineers Corporation came to be established in 1943 for the manufacture of wood screws. Machinery from abroad being impossible due to war, they fabricated their own machinery for the manufacture of wood screws, nails and cotton pickering machines.

When the erection of the plant was completed in 1944, the works were divided into three departments which work under three different names.

1. *Indian Defence Workshop:* for producing special machine tools, such as wood screw making plants, rivet making machine, machine-screw making plants, panel pin-making machine and wire-nail making machines.

2. *Sweden Screw Factory:* to manufacture wood and machine screws, panel pins and rivets of all types.

3. *Cotton wadding and Surgical Factory*: for making cotton pickering machines only.

The firm has recently been converted into a limited liability co., with a capital of 5 lacs which they soon hope to raise to 25 lacs.

Present Condition:—At present they have got two efficient plants for producing wood screws at least 600 grosses daily and 4 cwt. rivets and a dozen panel-pin making machines, to produce 1,350 lbs. of Panel pins daily. They have been able to manufacture some of the latest, highly-developed machines which could not be imported during the war. Their machine tools are of high efficiency. After an inspection by the Machine Tool Controller, the firm has been placed as licensed machine tool manufacturer for the various machine tools which were never manufactured in India before the war.

Their quality products under "Pinion & IEC" brand have been used all over India and have a ready market so that they do not get a chance to store their finished products and machines.

Besides this the firm manufactures commutators, rotors, stators for table and ceiling fans.

The total strength of the labourers employed by the Corporation is between 75 and 100, half of whom are skilled.

Dearth of skilled labour and paucity of steel wire, particularly of good quality has greatly hampered their progress so much so that for some time the main portion of the plant stood idle.

Future Plans:—The management have plans to increase the production as far as possible with a view to decreasing the cost. They have arranged to install a complete plant for wire drawing at their works. Equipment for producing such hardware accessories as screw hooks, coach screws, hasps, hinges, etc., is also under consideration.

Apart from it new machine tools shall be added to their workshop so that efficient machinery may be fabricated in India such as:—

Cold Heading machines for big size Engineering Rivets of all size.

Non-ferrous metal-wire drawing machines.

Jewellers Rolling Mills.

Multiple die machine for drawing thinner size wire for electrical wiring.

Wire-nail making machines of all sizes.

Bolt nut making plants.

Other such precision type of machines.

Indian Expanded Metals Limited.

Managing Director: Mr. N. B. Bhagat. *Office:* 2nd Floor, Prospect Chambers, Hornby Road, Fort, Bombay.
Works: Sewri Fort Road, Bombay 15. *Telephone:* Office: 30167. Works: 60445. *Telegrams:* Office: BHAGATSON Bombay. Works: EXPEEYAM Bombay.

The Company was incorporated in January, 1941. During the period of war their output is utilised by the Government exclusively towards defence requirements. The war over the Company is now in a position to cater to the civil demands of the country. They are manufacturing Expanded metal of Mild Steel, Brass, Copper and Aluminium in various meshes to B. S. specification and have plans to have another expanded metal cutting machine.

Indian Hume Pipe Co., Ltd.

Managing Agents: Messrs. Walchand & Co., Ltd. *Head Office:* Construction House, Ballard Estate, Fort, Bombay.
Factories: All over India, Rangoon and Colombo.
Telephone: 32894, *Telegrams:* HUMEPIPE, Bombay.

Introduction:—The Indian Hume Pipe Co., Ltd., were started in 1926 and are the chief, and till recently were the only company engaged in the production of Hume Pipes. By 1946 they came to own 40 factories in India, Rangoon and Colombo. The Company have put up an electric steel furnace and a rolling mill to produce their own wires and rods. They have also a well equipped workshop at Bombay and Jamshedpur for the manufacture of machinery. Their plan is to set up a Hume Pipe Factory in every province of India. This is expected to mitigate the difficulties of transport and labour and may

ultimately be of great benefit to the consumer. Their engineers are frequently sent to foreign countries to study the latest improvements to be embodied in their manufacture.

Hume Steel Pipes:—Hume Steel Pipe is a pipe built of M. S. Sheets of required thickness the joints (both longitudinal and circumferential) of which are welded up by metallic arc process. Steel Shells so built up are then internally lined with spun concrete and protected on the outside with either Hessian bitumen, or vibrated re-inforced cement concrete, thus protecting the steel completely from corrosion. The pipes can be manufactured with spigot and socket ends as required, and in length upto 30' according to the size of the steel plates.

Hume Steel Special:—In addition to the plain pipes, various types of specials such as flanged pipes, Bends, T's, Scour tees, Elbows, flanged or socketed branches, flanged tail pieces for valves, tapers fire plug branches etc., can also be supplied.

All flanges are forged and machined to the correct size and drilled as per B.S.S. for pipe flanges.

Old C. I. and Steel mains which have been in use and are corroded, can be re-conditioned and made as good as new by Hume process.

Conclusion:—Hume pipes combine in themselves the strength of the steel pipes and long life of the concrete pipe and therefore have been found to be very suitable for water supply and drainage projects.

Indian Malleable Castings Ltd.

Managing Agents: Messrs. Ramdutt Ramkissendass. *Office:* 4, Clive Ghat Street, Calcutta. *Works:* 44, Mohesh Mukherjee Road, Belghoria, 24 Parganas. *Telephone:* Office: Calcutta 3594 Works: B.B. 5322. *Telegrams:* INMALCA.

Introduction:—This premier concern of manufacturers of malleable castings was incorporated in the year 1937. The production was started in the year 1938. It was at once realised

that raw materials and working conditions in India were entirely different to those in England or America, and that Indian pig Iron particularly was not suitable for the manufacture of malleable castings by the process in vogue in Europe and America. Nevertheless, through the assiduity and undaunted efforts of the management and chiefly as a result of intensive research work conducted and carried out at the company's laboratory, it was possible to manufacture, for the first time in India, from indigenous raw materials, high grade malleable casting according to British Standard Specification. On the outbreak of war, the company's productive capacity, which had hitherto been almost entirely confined to Railway demands, was mobilized to the maximum degree to meet the requirements of the armed forces. Additional plants were installed and production was raised to the highest limit. Enormous quantities of war materials including parts for Rifles, Machine guns, Tanks, Aircrafts, Vehicles, Bridges etc. as also materials for the Red Cross, the Army-Outfit etc. were manufactured for the different theatres of war.

After the termination of the war the management was transferred to Messrs. Ramdutt Rankissendass with Mr. K. P. Goenka as the Chairman of the Board of Directors.

The products manufactured by the Company cover a very large field and meet the requirements of a wide range of customers. The chief reason for this is the singularly beneficial properties of this particular type of casting, which constitute, by themselves, a unique and distinct class of Ferrous industry. Indeed, the combinations of a high degree of malleability, toughness and strength, with a fairly low price is a bright feature of this type of casting, and is chiefly responsible for the wide popularity of these to practically all classes of consumers, here as also in other parts of the world.

A close study of the method of manufacture and the structure of malleable castings will explain the cause of the superior properties of these castings over other types of Commercial Iron Castings. These are being briefly dealt with in the following.

Manufacture and Properties of Malleable Castings:—The manufacturing process consists in the first step of melting a weighed charge of predetermined analysis in

oil-fired Rotary furnaces and poured into mould which are mostly made on Moulding machines. The hard and brittle white Cast Iron Castings are trimmed, cleaned and annealed in Coal-fired annealing furnaces. The annealed castings are tested, fettled, machined if necessary and despatched or stored. All raw materials, moulding and core sand, and finished castings are regularly tested for chemical and physical properties, and a very close control is maintained over the whole process of manufacture to ensure the high degree of quality. This is a work of vital necessity for the essential pre-requisite to the consistent production of High grade Malleable Castings according to the British Standard Specifications at a standard quality level, is to have a well-equipped laboratory, a band of skilled technicians and a very close chemical and metallurgical control over every stage of production.

From a Metallurgist's point of view, the process of malleablising consists essentially of decomposing the hard and brittle Iron Carbide, Fe_3C , into soft and malleable Ferrite, Fe and Carbon, which may either remain unaffected as in the Blackheart process or be oxidised and removed as in the Whiteheart process. The hyper-eutectic Iron-Carbon alloy first solidifies into an Austenitic solid solution, which keeps on progressively precipitating cementite as the temperature comes down and on reaching the Critical temperature the residual Austenitic matrix is transformed en masse into Pearlite. The metastable pearlite structure, during the slow process of cooling in the Annealing furnace, reaches a state of stable equilibrium by breaking down into Ferrite and Graphite. The lenticular structure gives rise to a uniform granular structure of Ferrite interspaced with Tempered Carbon nodules, distributed in an even and equitable manner. This naturally attributes to the metal the desired properties of high strength, malleability and toughness, as also good machining properties.

The unique properties of Malleable Cast Iron Castings are well illustrated in the qualities demanded by the standard specifications for this material. The B.S.S. No. 310-1927 (Amendment No. 2 March, 1942), to which these castings are manufactured, demand that "One tensile and one bend test bar shall be tested from every heat or cast of metal yielding a

maximum of 10 cwts. of castings, and a further pair of test bars shall be tested from each succeeding 10 cwts. (or parts of 10 cwts) of castings from the same heat or cast" and that these test bars which "must be cast at the same time and from the same melt" and "annealed similar to, simultaneously with and adjacent to the castings they represent" shall comply with the following tests:—

(a) *Tensile Test*—

A Tensile Test Bar, cast as nearly as dimensions specified must when tested in tension without any machining of the gauge length (2" $\times$ 0.564" dia), give the following results:—

Ultimate tensile strength—Not less than 20 tons,
per sq. inch.

• Elongation (in 2" length)—Not less than 7½%.

(b) *Bend Test*—

A test bar, cast as nearly as practicable to dimensions specified (8" $\times$ 1" $\times$ ⅜" thick) and tested without machining must withstand being bent cold through an angle of 90 degree round a radius of 1 in. without showing signs of cracks or flaws.

The above specifications, though very rigid, are easily met by the foundry through a close system of technical control and it obtains the following minimum results on tests carried on test bars regularly poured from every heat:—

Ultimate Tensile strength—26 tons per sq. inch.
Elongation (in 2" length)—15%.

Bend round 1" radius—Over 100. without any sign
of crack.

Consumers and Products:—From the consumer's point of view, the malleable castings solve the old and difficult problem of obtaining on a large scale and at a moderate price machine parts and other fittings which will be strong, unbreakable, shockresisting and will have a long life. The trouble and the expense of constantly changing vital machinery parts, usually made of Grey Cast Iron, with consequent loss of production and casting a reflection on the reputation of the manufacturer, coupled with the difficulty of obtaining steel forgings and sound steel castings

in large quantities within a short period at a reasonable price, was a constant source of headache to the engineers, industrialists and the general consumers. This problem engaged the attention of a large number of scientists in different parts of the world, and the conjoined result of their prolonged and arduous labour is the discovery and development of the Malleable Castings Industry. It is no wonder, therefore, that the industry has made huge strides in the field of engineering enterprises of the world. to-day, and is making steady headway in our country through the brilliant enterprises and achievements and sustained efforts of this pioneer firm. To-day, malleable castings manufactured by this company are covering a wide field of industries and consumer interests and are fast replacing weak and brittle Cast Iron Castings and expensive steel castings and forgings as also Brass and other non-ferrous castings. The users of Malleable Castings include Railways, Mechanical, Civil and Electrical Engineers, Jute and Cotton Mills, Pipe merchants. Cement factories, Potteries, Sugar mills and other major industries. A few of the important products manufactured on a large scale by the company is given in the following list.

1. Railway Materials:—

Universal Couplings Dummy Coupling, Ball Coupling, Release Valve, Spindle and other Vacuum Brake fittings, Release Valve Body and Cover, Buffer Washers, Spring and Dividing Plates, Top and Bottom Seats, Horncheck, Escapement Crank, Driving Bar Lug, Swan Neck, Bearing Plate, Oil Box, Signal Lever, Eccentric Strap and a wide variety of fittings for loco, Carriage, Wagon and Signalling.

2. Mechanical Engineering Goods:—

Gear and Pinion, Lever, Chain Link, Elevator Bucket, Bridge-piece, Washer, Crank, Pulley, Wheel, Bracket, Clamp, Pawl, Hinge, Vice, Lathe parts and a wide variety of other machine parts.

3. Electrical Engineering Goods:—

Fan hanger, Terminal Socket, Fan Shank, and other Fan parts, Shackle, Cap, Clevis and other insulator parts, Bracket, Back, Boss for Turbine and Fan Rotor, Wire Trainer etc., etc.

4. Jute and Cotton Mill parts:—

Loomsword, Beam Flange, Roving Steadier, Box Front, Dog Casting, Thread Guide, Shuttle Tip, Pressure Bar, Bobbin Lifter, Dobby Parts Hitter, Picker, Picking Shaft, Duck Bill etc., etc.

5. Pipe Fittings:—

Socket, Tee, Union, Bend Elbow, Lock Nut etc. of all sizes and types.

6. Miscellaneous Industries Goods:—

Chilled Roll, Guide, Balls etc. Quoill for Printing machine, Mould for Rubber Works and Glass Factories etc., Cycle parts, Gas. Cylinder Cap, Filbow, Knob casting, Protecting Dome, Shoe Machinery parts, Step Iron for P.W.D. Hook Cleat, Earth Auger, Eye Bracket, Gun Parts etc.

Future Outlook:—Due to the difficulties of obtaining the requisite machinery from abroad during the war and afterwards, the company could not develop the factory to the extent desired in order to keep pace with its growing business and activities. The programme of installing a fully equipped machine shop and machanising the foundry on modern lines to meet the pressing demands of customers all over the country, is however always in view of the management, and slow but steady progress is being made in this direction. It is hoped that in due course the company will be able to have this programme fully executed and will be in a position to undertake manufacture of complete machines for Textiles and other industries as also complete assembly of Railway fittings. There is every reason to believe that with the advance of industrial expansion of India and an increasingly progressive and broad outlook and growing technical knowledge of industrialists, associated with increasing demands for quality goods, this pioneer and solitary firm of High grade malleable manufacturers of this country will fulfil its role of forming one of the basic units of industrial framework of the great and prosperous future India.

Indian Smelting & Refining Co., Ltd.

Managing Agents: Messrs. Cotton Agents Ltd., Imperial Bank Bldg., (Annexe), Bank St., Fort, Bombay. *Office:* Shale Building, Bank Street, Fort, Bombay. *Works:* 101, Sion Road, Sion, Bombay. *Branch Office at Calcutta:* 1A, Vansittart Row, Calcutta. *Telephone:* Bombay: 32831 (2 lines) Calcutta: 562. *Telegrams:* ISARC, Bombay. ISERC, Calcutta.

Introduction :—The Indian Smelting & Refining Co., Ltd., was started in the year 1930 with six furnaces and an up-to-date metallurgical laboratory under the supervision of a European expert metallurgist. It was floated as a private limited company with a small capital but since December 1946 it has been converted into a public limited company.

Manufactures :—The Indian Smelting & Refining Co. Ltd. are producing metals and metal alloys of non-ferrous nature. They have introduced rejuvenating and reconditioning of non-ferrous metals in the Indian State Railways and Private Railways. In this respect they have been the pioneers. Before the inception of their works the Rejuvenating and Reconditioning of non-ferrous metals and metal alloys was quite unknown in the Indian State Railways and Private Railways. Now after about 11 years reconditioning of metals has become a daily routine and is executed by many works which appeared later on the scene. Their lines of manufacture include the following :—

Gun Metal, White Metal (Antifriction), Type Metal, Tin Solders, Bell Metal, Yellow Metal, Die Casting Alloys, Non-ferrous Castings and all Metal Alloys to any specification.

Present Position :—The non-ferrous smelting and refining factory is situated in Sion, Bombay, and has a capacity of about 4,000 tons per year and employs 150 workmen. In the field of metallurgical engineering smelting and refining, the factory is one of the biggest of its kind in the country.

The Company is putting up a Copper and Brass Sheet Rolling Mill at Bhandup, Bombay, which will be one of the biggest and the most up-to-date non-ferrous rolling mill in India. Modern machinery has been imported from the U. S. A. and is under erection. The rolling mill is expected to start production in a few months.

Indian Standard Metal Co., Ltd.

Managing Agents: The Investment Corporation of India Ltd., Ewart House, Bruce Street, Fort, Bombay. *Office & Works:* Chinchpokli Cross Lane, Bombay 27. *Telephone:* 43018. *Telegrams:* ISMETCO.

Introduction:—The Company was founded in 1936 by Mr. Anton Schwarz, M.I.M. (London) as a private partnership firm and was converted into a private limited company in 1939 with an authorized capital of five lacs of rupees. At the beginning of the War the Company, who had their Works at Mazgaon, acquired new premises in the Mill Area at Chinchpokli Cross Lane, Byculla. The new Works cover an area of 38,000 sq. ft. In 1943 Messrs. Tata Sons Ltd. acquired through the Investment Corporation of India Ltd. a controlling interest in the firm. The authorized capital was raised to fifty lacs of rupees of which ten lacs are paid up at present.

Mr. A. Schwarz, the pioneer of the non-ferrous smelting and refining industry in India, who likewise was responsible for starting other similar enterprises in this country, is still the Technical Director of the Company as a member of the Board of Directors.

During the last War the Company executed large Government orders for manufacturing munition components.. The I. S. M. Works were declared a Government Notified Factory. Till the end of 1945 they employed 900 workers. This number, has, however, been reduced to 378.

Lines of Manufacture:—The Company has up-to-date Smelting and Refining Works, with a smelting capacity of 14,000 tons per annum, engaged in the manufacture of Copper, Gun Metal, Phosphor Bronze, Brass, Aluminium, White Metal,

Solders, Type Metal, Monel Metal, Acid and Alkali Resisting Alloys, Fusible Alloys and other Non-ferrous Alloys. They are also producing Zinc Oxide used for various purposes including manufacture of anti-corrosive paints. Apart from this, the firm operates the largest Non-Ferrous Foundry in India, manufacturing rough and ready-machined sand, centrifugal, chill and die-castings. An up-to-date Machine Shop, equipped with the latest type of machine-tools, is attached to the Foundry. The Company manufactures and has marketed with outstanding success for the last ten years a high tin-base Bearing Metal, branded as "AD" Bearing Metal (Registered Trade Mark), which to-day is one of the standard requirements of Engineering India. Many letters of appreciation on the outstanding qualities of their "AD" Bearing Metal have been obtained and clients have pointed out in several instances that "AD" Bearing Metal has been proved superior to imported Bearing Metal.

The laboratory and Testing Department of the Company have undertaken material testing and analysing on running contracts for Government Departments and are at present engaged in important metallurgical research on behalf of Government.

Future Plans:—The Company's management, anxious to maintain the firm's reputation as the leading manufacturers in India, has an ambitious postwar expansion scheme including the extension of the present refining and smelting capacity to 20,000 tons per annum. Schemes have been worked out to start an Electrolytic Copper Refinery and the expansion of the existing Departments have been taken in hand and an industrial estate of 12000 sq. yards area has been purchased for this purpose. Machinery, new furnaces, etc. to the value of Rs. 5,00,000 have been ordered from abroad and are expected to arrive very soon.

Indian Steel & Wire Products Ltd.

Managing Agents: Messrs. Indra Singh & Sons, Ltd. *Office & Sales Office:* Wellesly House, 7, Wellesly Place, Calcutta. *Head Office & Works:* P. O., E. I. R. Works, (Singhbhum), Tatanagar, (B. N. R.) *Telephone: Cal.—Office:* Calcutta 4317, *Head Office & Works:* Jamshedpur 18, *Telegrams:* WIREFORMS.

Introduction :—The Indian Steel and Wire Products Ltd. came into being just after the world War I but it did not thrive and came under liquidation when it was purchased by Sardar Indra Singh (now Sardar Bahadur Sir) in 1926.

Development :—The total capacity of the mills at the time of purchase was less than 1,500 tons of wire and wire products annually. Additional equipment increased the capacity to 2,000 tons per year. In the meantime protection was also granted by the Government in 1931 which was extended for seven years in 1934. During this period Sardar Bahadur Sardar Indra Singh erected his own Rod Mill for making wire rods which were till then imported from abroad. The capacity of the plant was raised to 45,000 tons of rods per year which resulted in increased output of other subsidiary products of wire and wire nails also.

In 1935 the concern was converted into a Limited Liability Company.

Pre-war Position :—Till the outbreak of the war the Company was engaged in manufacturing the following items :—

Rods below $\frac{1}{2}$ " diameter, Hard Bright Wire, Annealed Wire, Galvanised Wire, Wire Nails, Barbed Wire, Bolts, Nuts and Rivets.

War-time Development :—During the war they successfully started the manufacture of Telegraph wires and Barbed wires which were considered to be beyond the scope of Indian Factories. For this purpose they had to extend their plant by twenty four additional machines.

Manufactures :—At present the items of their manufacture include :

Rods and Squares.

Wires—Hard bright and annealed wire, Galvanised Wire, Telegraph Wire, Barbed Wire, Spring Steel Wire, Metal Spraying Wire, Signal Wire, Electrode Wire, Standard Wire, Stitching Wire, Needles and Pin Wire, Tyre Wire.

Hinge Pins, Staples, Wire Nails, Panel pins, Bolts and Nuts, Rods.

Conclusion:—In the matter of quality, the products of the Indian Steel & Wire Products Ltd., claim parity with the imported materials.

Indian Tool Manufacturers Ltd.

Managing Director: Mr. S. G. Nevatia. *Office:* 250, Worli, Bombay 18. *Works:* 101, Sion Road, Sion, Bombay. *Telephone:* 42091, *Telegrams:* ITOOLS.

Introduction:—The Indian Tool Manufacturers Ltd. were started in 1937 by Mr. G. I. Bondy, in co-operation with Messrs. Francis Klein & Co. Mr. Bondy had brought with him from Europe all the machinery for the manufacture of small tools such as twist drills, reamers, and cutters, etc. The factory was put up in July, 1936, and has been running under his own supervision.

In June, 1943, all the shares of the Company were purchased by the present management with Mr. S. G. Nevatia, as Managing Director. Important additions and alterations were then carried out to increase production.

Manufactures:—This is one of the few factories in India specialising in the manufacture of small tools. Best quality steel, most suitable for manufacturing tools of different kinds is used.

Present Position:—At present the factory is capable of producing about 70,000 tools per month. By adding some more machines for which arrangements have already been made, this will reach about one lakh of tools per month.

Future Outlook:—During the war the factory was under control and worked only for the Government. Now that the control has been lifted the factory is working for all customers. Their manufactures at present include the following:—

Drills in fractional and decimal inch sizes and in millimetre sizes.

Straight and Morse Taper Shank Drills ranging from $3/64"$ to $3"$ dia., in standard and special lengths.

Square Taper Shank Drills ranging from $1/4"$ to $2"$ dia.

Three and Four Groove Drills.

Parallel Shank Drills and $1/2"$ and $5/8"$ Shank ranging from $1/8"$ to $1-12"$ dia.

Combination Centre Drills.

Special Drills according to requirements.

Reamers

Hand and Machine Reamers with straight or spiral flute ranging from $1/8"$ to $2"$ dia.

Bridge Reamers.

• Taper Pin Reamers.

Chucking Reamers.

Reamers for Morse Taper Holes.

Taper Reamers for Locomotive Work.

Special Reamers according to requirements.

Milling Cutters upto 5" Dia.

Slotting Cutters.

Plain Milling Cutters.

Side and Face Cutters.

Single, Double and Equal Angle Cutters.

Relief Cutters, as for grooving taps, for fluting reamers, etc.

End Mills.

T Slot Cutters.

Woodruff Cutters.

Shell End Mills.

Special Cutters according to requirements.

Taps

Special Taps for various purposes.

Investa Machine Tools & Engineering Co., Ltd.

Chairman of the Board of Directors: Mr. A. D. Shroff. *Managing*

Agents: Messrs. Investa Industrial Corporation Ltd.

Head Office: Ewart House, Bruce Street, Fort, Bombay.

Works & General Office: Clerk Road, Pais Street,

Bombay 11. *Telephone:* Head Office 26081 & 26082.

Works: 42004 & 42005. *Telegrams:* Head Office:

IMMACTOOLS Works: VESTATOOLS.

Introduction:—The Company was incorporated in the year 1942 and was formed with the primary object of manufacturing first-class machine tools of various types. Due to the difficulty of securing machine tools, the old established firm of Messrs Vithaldas Purshottam & Sons was purchased *en block* and further a number of machines were purchased elsewhere and installed in the factory. The premises were enlarged and altered. The factory now comprises a compact well equipped, workshop with foundry, drawing office etc. and has Rs. 20 lacs invested in it. Their work is entirely self-contained and the machine tools manufactured in the factory are designed and produced from beginning to end under one roof.

Items of Manufactures:—Their items of manufacture include machine tools such as Shearing and Punching Machines, Guillotine and Shearing Machines, Mortar Mills and Lathes. The production of Investa Lathe which the Government of India have classed as the first grade is steadily progressing. In addition to these, small machines such as Polishing Machines, Rotary Core Making Machines, Brick Making Machines are also manufactured.

The Company employs 720 workers, skilled and semi-skilled and is a first-class machine tool manufacturer in the country. Under the management of Tatas, the Company is expected to make further progress in the manufacture of machine tools in the country in the very near future. Although started recently, the Company has already produced a number of machine tools of the first grade quality and has made a good contribution to the war effort. They are contemplating shifting of factory to a bigger premises equipped with modern high production plants.

Jaipur Metal Industries Ltd.

Managing Agents —Messrs Poonamchand and Brothers Ltd
Office & Works Near Railway Station, Jaipur, Rajputana
Branch Offices (1) Kamani Chambers, Nicol Road, Ballard Estate, Bombay. (2) 9, Pratapsingh Bldg, Queensway Lane, New Delhi 1 *Telephone* Office & Works 172
Telegrams METALS

Introduction:—This is one of the most important Units in the Kamani Group of Industries for the manufacture of Non ferrous Metals and Alloys. It is the biggest industrial Unit in Jaipur State and the largest of its kind in the country. Originally established as a private concern in 1942, it was converted into a public limited company. Its present capital investment is Rs 35 lakhs.

Plant & Equipment:—The works comprise a Refinery, a Rolling Mill and Wire Drawing Plant.

Activities:—To the Refinery are also attached the Moulding and Finishing Departments. In this section the work of refining, reconditioning, alloying and chill casting of practically all non-ferrous metals is undertaken.

In the Rolling Mill Department, rolling of rounds, squares and hexagons from $\frac{1}{4}$ " to $1\frac{3}{4}$ " and drawing of all the sections upto 3" are undertaken. These sections are supplied in soft, semi hard, hard and bright polished conditions.

The Wire Drawing Plant draws all kinds of Wires non-ferrous metals and alloys upto 40 gauge. They have also arrangements for insulating Copper wires either with cotton (D C C) or silk (D S C.)

Specialities: The manufacture of arsenical copper and their rods from ordinary copper for use in Boilers of Railways locomotives and to the required specification is one of the outstanding speciality of the factory. They are manufacturing all non-ferrous alloys to various specifications such as B. S. S., I. R. S., I. M. S., etc. They have successfully done some of the most difficult castings in gun-metal and phosphor bronze, both solid and cored. Similarly, they have succeeded in rolling

manganese bronze, phosphor bronze, etc., requiring a very high degree of tensile strength. All these products satisfy chemical tests as well as the physical tests such as tensile strength, elongation and yield point tests as laid down in the various standard specifications. They have also succeeded in making master alloys for making phosphor copper, arsenical copper, silicon brass, etc. and all kinds of bearing metals required by the railways. Their materials have been tested in different Government Laboratories and found fully satisfactory, both in tests and in actual service.

Laboratory:—The Unit also maintains a good Chemical Laboratory with facilities for routine analysis and research development of new processes. A universal testing machine and a metal microscope are to be set up shortly.

Future Plans:—They propose to establish plants for the manufacture of Lead Tubes and Beryllium alloys in the near future.

Jagatjit Engineering Works.

Proprietor: Mr. K. L. Sakhuja. *Office & Works:* Opposite Railway Station, Kapurthala, E. P. R. *Telephone:* 25. *Telegrams:* JAGWORKS.

This private firm was established in 1944 with a capital of Rs. 1,75,000. It is engaged in the manufacture of wood screws, machine screws, rivets and cut-tacks and machine parts. It has about 200 workers in its employ.

Jamnadas Brothers, Calcutta.

Proprietors: Mr. J. B. Ved. Mr. K. B. Ved. *Office:* 69/1, Canning Street, Calcutta. Present address 195/1, Harrison Road, Calcutta. *Works:* Pratap Aluminium Works, 139, Benares Road, Salkia, 13, Watkins Lane, Howrah. *Telephone:* Howrah 403, *Telegrams:* POORADAM.

Introduction:—This firm was first run in the name of Messrs. Gordhandas Maneklal but six years ago it was purchased by the late Prop. Seth Bhanji Morarji Ved. Since then the factory has been steadily progressing. The workshop, situated

at 13, Watkins Lane was purchased by the present proprietors in 1944. In spite of very critical times in the past as well as in the present the progress of the firm has been steadily maintained.

Products :—The works manufacture household utensils of all varieties of Aluminium, Brass and Copper.

Jamshedpur Engineering & Machine Mfg., Co. Ltd.

Managing Director: Sardar Bahadur Sir Indra Singh.

Office & Works: P. O. Telco Works, Tatanagar, (B. N. Rly.). *Branch Office at Calcutta:* Jemco Ltd., 7, Wellesley Place, Calcutta. *Telephone:* Jamshedpur 276. *Telegrams:* JEMCO, Tatanagar.

Introduction :—Established in 1921 it was a European managed firm manufacturing textile machinery. In 1923 it was re-constituted as a general engineering works which, however, came to grief in 1926. In 1934 it was purchased by Seth Jeewanlal Motichand who in 1936 for certain considerations transferred his interests in the concern to Messrs. Indra Singh & Sons Ltd.

It has now a fully equipped machine shop, a pattern shop, a general foundry, a roll foundry, a roll turning shop and a chemical laboratory.

Manufactures :—At present the concern is engaged in the manufacture of different qualities of rolls such as Plain Chill Rolls, Sand Cast Grain Rolls, Nickel-chrome Chilled Rolls, Super-hard Chilled Rolls, Heavy Duty Rolls, Semi-Steel Rolls (Nickel-Chrome-Vanadium Semi-Steel Products), Mina-S Rolls, Adamite Rolls, Phoenix Rolls etc.

The concern manufactures chilled cast iron wheels according to the latest British and American specifications. Such wheels are used in locomotive tenders and in good wagons.

Special Duty castings e.g., anticorrosive and heat resistant castings and other specialised lines of manufacture which are required for the chemical industry are also undertaken. The manufacture of Iron having high tensile and good fatigue properties which are specially required for machine parts subject to intense fluctuating stresses, is also undertaken by the firm.

Their list of consumers includes such important concerns as (1) The Tata Iron & Steel Co., Ltd., (2) The Steel Corporation of Bengal Ltd., (3) The Tinplate Co., of India Ltd., (4) Mukand Iron & Steel Works, Bombay & Lahore, (5) W. Leslie & Co., Ltd., Calcutta, (6) Bata Shoe Co., Ltd., Batanagar, (7) J. K. Iron & Steel Co., Ltd., Kanpur, (8) The Metal & Steel Factory, Ichapur, (9) Eagle Rolling Mills, Kumardhubi, (10) Guest, Keen, Williams Ltd., Calcutta, (11) The National Iron & Steel Co., Ltd., Belur, (12) The Indian Steel & Wire Products Ltd., Indranagar, Via. Tatanagar, (13) The Steel & General Mills, Delhi, (14) Steel Re-rolling Mills, Negapatam and others—in fact all the rolling mills of India.

Conclusion:—Since the elimination of Japan from the field this firm is the only one manufacturing chilled rolls and chilled wheels in the whole of Asia including Siberia.

Very good progress has been registered by the Jamshedpur Engineering and Machine Mfg. Co., Ltd., in the manufacture of rolls in India. Considering its importance to the entire metallurgical industry and the headway it has made towards self-sufficiency it can be said without prejudice that the industry has a fine future ahead.

Jas. Alexander & Co. Ltd.

Regd. Office & Works: 15, Watgunge Street, Kidderpore, Calcutta. *Office:* 8, Dalhousie Square East, Calcutta. *Telephone:* Works: South 1401 & 1402. Office: Cal 2879. *Telegrams:* JSALEX.

Established in 1916 during World War I, the firm mainly worked for the Munitions Department supplying chiefly timber poles for bullock traction, axle trees for mule carts, picket posts for barbed wire entanglements etc.

With the cessation of hostilities, the management took advantage of the diverse equipments of the large workshop and switched over to the production of machineries and other equipments for Sugar, Cotton, Jute Mills, Tea Gardens, Collieries, Railways etc. The firm undertook to do every thing from the production and construction of coolie huts and fencing materials.

to the fabrication and creation of self-supporting chimneys, and soon earned the reputation due to a firm of first class mechanical and structural engineers. It made a name, particularly in the manufacture of W. I. and C. I. pulleys and other transmission gears.

With the increasing demands for the high grade machinery manufactured in the factory, the need for enlarging the same was felt when in 1922 the present site of the workshop was acquired and the firm was transformed into a Limited Liability Company. In 1932, the Company under agreement with the Air Conditioning Corporation Ltd. started the manufacture of air conditioning plants, including humidifier machines, galvanized, trunking, regulating, dampering, circulating fans. Electric Arc welding units were also introduced during the period. Storage tanks of various types and capacities have been manufactured by the company and have been widely used throughout the country.

But it was not till the outbreak of World War II that the Company was put to the severest test when it was required to manufacture complicated machinery and machine parts from drawings and often without these even.

In 1941 the management of the Company was transferred and the workshop was transformed into one of the largest and most up-to-date of its kind in the East.

During the war years, the workshop manufactured such varied items as overhead travelling cranes, portable jip cranes, chimneys, cupolas, lens grinding machines, Water columns for locomotives, bitumen boilers, gasoline storage tanks, pulleys pulley blocks etc., etc.

Equipments for all kinds of machines, machine tools and technical experts, were added rapidly. Large projects have been taken in hand and new machinery and equipments for the workshop worth lacks of rupees have been ordered for enlarging the workshop further. The workshop is now completely equipped for handling any kind of mechanical and structural work.

Jayant Metal Manufacturing Company.

Proprietor:—Mr. C. D. Parikh. *Works & Head Office:* 152, Lohar Street, Bombay, *Branch:* 17, Tarachand Dutt Street, Calcutta. *Telephone:* Office: 23919, Cal. Office: B.B. 6449, Works: 42321, *Telegrams:* JAYANTBABU.

Introduction:—Jayant Metal Manufacturing Company was founded by Mr. Chimanlal Dayabhai Parikh in partnership with Mr. Jayantilal S. Padshah in 1935. They started with a small foundry to cast brass, copper and bronze metal building fixtures of modern designs. Now they have a big factory with a good mechanical workshop, electro-plating plant and skilled workers operating modern equipment.

Manufactures:—Before the outbreak of the war their manufacture was confined to articles of building hard-ware only. Since 1939 they have started the manufacture of non-ferrous rods and wires also. The entire process of billet-casting, rolling and drawing are done at the factory. Their present capacity is about 65,000 lbs. per month of wire and 30,000 of rods. They manufacture their wires and rods to different IRS and BSS and other Government specifications and possess necessary equipment to draw wires from 14 S. W. G. to 20 S. W. G. They have the wire drawing blocks to draw wires from 14 S. W. G. to 20 S. W. G. They manufacture and supply various specification materials to Government the chief being silicon, welding rods, wires, naval brass rods BSS 251 brass to I.R.S N-1-36 and B.S.S. 249, nuts and bolts. They have started manufacturing hexagon and square section also. Hexagons ranging from $1\frac{1}{2}$ " flat, brass square section up to a maximum of one inch square, square copper wire for the manufacture of boat nails brass and copper strips and flats varying from $2\frac{1}{2}$ " $\times$ $\frac{1}{2}$ " to $\frac{3}{8}$ " $\times$ $\frac{1}{4}$ ". Nickel silver wire and phosphor bronze sheets are also now manufactured by them.

Recent Development:—In the year 1943, a semi automatic machinery for the manufacture of wood screws with capacity of 400 gross per month was installed, the largest size of screws manufactured being 4" $\times$ 20 S.W.G. They have also extended their equipment for maintenance work and for the manufacture of dies. They also manufacture arsenical copper rods which are

needed by Railways. They have installed one tilting furnace of 400 lbs. capacity and an automatic woodscrew machinery with a capacity of 2,000 gross of wood-screws per month. They have also succeeded in the manufacture of lead and silver wire.

Jay Engineering Works Ltd.

Managing Agents:—Messrs. Madan Mohan Lal Shri Ram & Co. Ltd., 22, Curzon Road, New Delhi. *Office & Works*: 183-A, Prince Anwarshah Road, P. O. Dhakuria, Calcutta. *Branch Offices*: (1) Sheoki Bazar, Agra. (2) Yusuffganj, Aligarh, (3) Hewett Road, Allahabad, (4) Bansh Phatak, Benares. (5) P-16, Bentinck Street, Calcutta. (6) 84/1/A, Bowbazar Street, Calcutta. (7) 46, Upper Circular Road, Calcutta. (8) 57, Cossipore Road, Calcutta. (9) 318/1, Chittaranjan Avenue, Calcutta. (10) 56, Chittaranjan Avenue, Calcutta. (11) 103/B, Cornwallis Street, Calcutta. (12) Halsi Road, Collectorganj, Kanpur. (13) Paltan Bazar, Dehra-dun. (14) Egerton Road, Delhi. (15) Katra Ahmedganj, Farrukhabad. (16) Usha Sewing Machine Co., Hajiganj. (17) Bestupur Bazar, Jamshedpur. (18) Nazirabad, Lucknow. (19) Kambo Gate. Clock Tower, Meerut. (20) Near Post Office, Muzaffar Nagar. (21) Motigheel, Muzaffarpur. (22) Bakherganj, Bakipur, Patna. (23) Hindpiri, Ranchi. (24) Sahidganj, Saharanpur. *Teleprone*: Office & Works: South 2020. *Telegrams*: Office & Works: USHAKO, Calcutta.

Introduction:—The Company was started in 1935 with an initial capital of Rs. 2,50,000 as a private limited company but was subsequently converted into a Public Limited Company in 1938 and its capital was raised to Rs. 15,00,000. The present capital investment of the company is Rs. 45,00,000/-.

Manufactures:—It had been started with the object of manufacturing Sewing Machines on a large-scale but the exigencies of the war obliged them to take up several Government contracts under which they manufactured various engineering stores, Telephone sets, Air-craft and Armoured Vehicle Components, and many other Munitions items for the different theatres of the war.

They have taken up certain other items also and are manufacturing Railway Signalling Instruments, Cooking Ranges, Fans, Water-meter, Hurricane Lanterns and Meehanite Castings also. They also acquired rights to exploit a patent of the Board of Scientific and Industrial Research of the Government of India and started a separate section for the manufacture of Paints, which has to-day developed into a full-fledged Paint Factory.

They have now installed an imported complete plant for the manufacture of Sewing Machines. The firm has developed into a huge, well-equipped modern workshop, giving employment to more than 1,500 people with a monthly production capacity for 1,400 Sewing Machines, 800 Electric Fans, 25,000 Hurricane Lanterns, Cooking Ranges, Meehanite Castings and Industrial Paints like Stoving Enamels for wood and metals, Insulating Varnishes, Copal Varnish etc., etc. Jobbing work in the nature of casting, Forging and Machining is also conducted on a large scale.

The firm has both physical and chemical laboratories with facility for routine analysis and research work for the improvement of manufacturing technique and development of new processes.

Besides these, they also undertake orders for castings, forging and machining for miscellaneous articles.

Future Outlook:—The firm, with its able management, its resources and present line of manufacture, has a great future and the production of Sewing Machines, Hurricane Lanterns and Electric Fans will be shortly increased upto 3,000 Sewing Machines, 50,000 Hurricane Lanterns, and 1,500 Fans per month.

Further, necessary steps have already been taken to produce 1,000 Electric Motors in their Works.

Jeewanlal (1929) Ltd.

Managing Agents:—Messrs. Jewanlal (1929) Ltd. *Office:* 101, Netaji Subhas Road, Calcutta. *Works:* 95, Grand Trunk Road, Belur, Dist. Howrah. *Branch Offices:* (1) Kodak

House, Hornby Road, Fort, Bombay. (2) 127-9, Mint Street, Madras, 1. (3) Riverside, Rajhmundry. (4) 55/57, Tseekai Maung Taulay Street, Rangoon. (5) Maalla, Aden. *Telephone*: Office: Calcutta 3323 (3 lines) Works: Howrah 515. *Telegrams*: CROWNALUCO Calcutta. MARTALUMIN.

Messrs. Jeewanlal (1929) Ltd. came into being as a result of amalgamation of Jeewanlal & Co. with a Canadian Company. Jeewanlal & Co. had come into existence in 1918 and had their branches in many centres including even places outside India like Rangoon and Aden. The price of Aluminium fell after the world No. 1 and Aluminium Manufacturers in other countries made a bid for the Indian market. One of these was a Canadian Company and Jeewanlals were merged with this Company in 1929. Thus came into being Jeewanlal (1929) Ltd.

• They are one of the top rank manufacturers in the industry and have extensive trade connections with several neighbouring countries. Messrs. Jeewanlal (1929) Ltd. have expanded their business considerably during the last war. Their organisation for collecting scrap is wide spread and their collections are large.

The working capital of the firm is Rs. 80,000/- and they provide employment to about 2,000 men.

The articles of manufacture of Messrs. Jeewanlal (1929) Ltd. include Aluminium Kitchen-ware, Anodised Aluminium utility and presentation articles, Aluminium Fan Blades and other parts of the Fan Industry, Aluminium embrocation containers for the Pharmaceutical Industry, Aluminium Bottles for Sandalwood Oil Industry, Aluminium railings for architectural purposes, aluminium motor plates and numbers, Aluminium Stationery racks for typists, Suitcases in all sizes, Aluminium Loud Speaker Horns, Tea Rung Pwls and other requisites for Tea Industry, Light Reflectors and Shades.

Future Plans:—With a programme to expand their business Messrs. Jeewanlal (1929) Ltd. are now erecting a plant to manufacture 'Alpaste' for the paint industry at Bombay, which will be the first of its kind in India. An up-to-date tool and die shop is also under erection for tools and dies for their

own plants. Besides, all the plants of the company are under renovation, and machinery and equipments are being increased to improve their capacity.

J. K. Iron & Steel Co., Ltd.

Managing Agents: J. K. Commercial Corporation Ltd.
Managing Director: Mr. S. M. Bashir. *Office:* Kamla Tower, Kanpur. *Works:* Kalpi Road, Kanpur. *Telephone:* Office: 2532/33/34/36 Extension No. 9. Works: 2887.
Telegrams: STEEL, Kanpur.

Introduction:—This Company was established in the year 1935 with a capital of more than Rs. 50,00,000. The plant which was ordered from abroad and came in 1938-39 consists of:

(1) Electric Steel Furnace, (2) Rolling Mills especially adapted for making hoops and strips of small sizes. All sections from 1" down to $3/16$ " of rounds, squares, flats, angles, etc. can be manufactured in this mill.

Manufactures:—The Company has specialised in manufacturing hoops only for cotton and jute baling purposes for which they were till recently the only concern in the country.

Their present output of hoop is estimated at 700 tons per year with capacity for 17,000 tons.

They also manufacture bars and rods and undertake castings both ferrous and non-ferrous.

The Company employs about 3,000 labourers on an average and has introduced various welfare measures for their benefit.

Their sales have been canalised through Messrs. Mac Gregor Balfour Ltd., Calcutta.

Jogendra Nath Chatterji & Sons.

Office: 21, Maharshi Devendra Road, Calcutta. *Works:* 18, Chatterjee Para Lane, Howrah.

This is a very old proprietary concern starting its business in 1873. The manufactures of the Company are C. I Pans, G. I. Buckets, Castings of any descriptions, Machinery Parts, Sanitary Fittings, etc.

It employs about 150 men,

Jyoti Ltd.

Managing Agents: Messrs. Bhailal Amin & Sons, Baroda.

Managing Director: Mr. Ramanbhai B. Amin. *Office &*

Works: Chemical Industries, P.O., Baroda. *Telephone:*

287. *Telegrams:* JYOT.

Introduction:—Messrs. Jyoti Ltd., Baroda, came into being as a separate entity in 1943 although a workshop had been in existence ever since 1936 doing repair works for the engineering department of the Alembic Chemical Works Ltd.

For the time being their attention was concentrated on the manufacture of chemical plants, small chemical machines, and domestic power pumps, under their trade mark 'Jyoti'. They also manufactured large size aether, carrene and pilot vegetable ghee plants mostly for their sister concern Alembic.

Subsequent Developments:—By and by they began manufacturing all types and sizes of pumps to meet the increasing demand of agriculture, water works, sewage stations, industries and domestic requirements. Soon they took in hand a scheme for the manufacture of printing machines of all types and to begin with they brought out their 'Jyoti' Paper cutting machines. Soon they shifted their works to a new and more spacious site where additional equipment was installed and the capacity of their foundry was increased ten times. A Testing Laboratory was also started to conduct metallurgical and chemical tests of Castings and Saws etc. and research work.

Present Position:—The present capacity of their production can be roughly put at about 40 tons of cast iron castings and 2 tons of non-ferrous castings per month.

Messrs. Jyoti Ltd. employ on an average 415 workers, both skilled and unskilled, in their well equipped foundry, machine, welding, fitting, and testing shops. They have about 24 qualified supervising engineers in different shops. Their Managing Director and Manager and Engineer both had their training in mechanical and electrical engineering respectively in Germany and America.

Manufactures:—The main lines of their manufacture at present are:—

PUMPS: Bore Hole Pumps, Centrifugal Pumps, Domestic Power Pumps, and Boiler Feed Pumps.

FILTER PRESSES: Plate and Frame type suitable for filtering Vegetable Oils, Sugar can juice, Chemicals etc.

CHEMICAL PLANTS: Oil Refinery and Vegetable Ghee Plants, Soap Plants, Heat-Exchanger, Barometric Condenser, Vacuum Vessels, Steam Jet Ejector, etc.

PAPER CUTTING MACHINE: 30" size suitable for both power and hand driven.

STORAGE TANKS. Of welded construction both Round, Square and Rectangular in shape. •

ELECTRIC MOTORS: Recently Messrs. Jyoti Ltd., have started production of Electric Motors and manufacture A.C. squirrel cage type from 1 to 20 H. P. suitable for 400/440 Volts, 3 phase, and 50 Cycles.

Future Schemes:—In order to expand their business Messrs. Jyoti Ltd., with the help of their present Manager and Engineer Mr. N. B. Amin who has had thorough theoretical and practical training for a number of years in electrical engineering in America have planned new schemes and efforts are being made to execute them.

Kamani Engineering Corporation Ltd.

Office: Kamani Chambers, Nicol Road, Ballard Estate, Bombay. *Works:* Bombay, Kalyan Lahore. *Telephone:* 30586, *Telegrams:* REFINERY.

The Kamani Engineering Corporation has been registered as a public limited company with Raj Ratna Ramji Hansraj Kamani as its Chairman. This Company has acquired 3 existing factories, viz., W. Leslie & Co. (Punjab) Ltd., Lahore. (2) W. Leslie & Co., (Bombay) Ltd., Bombay, and (3) Kamani Enamel Industries Ltd., Kalyan, Bombay.

The authorised capital of the Company is Rs. 1,50,00,000 and the present issue of share capital has been Rs. 60,00,000.

LAHORE FACTORY.

This factory is a full-fledged and well equipped modern factory manufacturing all kinds of hand-tools and implements. It is equipped with Muffle furnaces, pyrometers and up-to-date equipment for heat treatment of tools and implements. It also undertakes rolling and drawing of bars and rods of brass, copper, steel etc upto 3" size

The main departments in the factory are (1) Rolling Mill (2) Foundry and Machine shop (3) Smithy shop (4) Augers (5) Agricultural implements (6) Malleable castings.

BOMBAY FACTORY

During the pre-war years the factory was fabricating brass, copper and aluminium utensils for the civil market. Owing to the very great demand of war on all industries, the factory had to switch on to the requirements of Defence Services for jugs, mugs, basins, comodes, soup plates, tin mess etc

The Engineering Corporation, as a part of its development scheme, proposes to instal Electric Steel Furnace for the manufacture of machinery and machinery parts at Bombay. This new company also proposes to undertake in course of time the manufacture of Sugar Mill Machinery, Power Alcohol Plant, Vegetable Ghee Plant, Rolling Mill Plant and Agricultural Machinery etc., as also various machinery parts of Railways, Textile and other industries in the country.

KALYAN FACTORY

This factory at Kalyan is manufacturing all kinds of Enamelware, such as, basins, mugs, jugs, soup plates, hospital ware etc. With the installation of a modern Enamel Plant at Bombay, as is proposed by the Engineering Corporation it would be possible to meet the growing demand for Enamelware in the country. The manufacture of Enamelware in India also holds out prospects of export to nearby countries.

Kamani Metals & Alloys Ltd.

Managing Director: Mr. Raj Ratna Ramji Hansraj Kamani.

Office: Kamani Chambers, Nicol Road, Ballard Estate, Bombay. *Works:* Agra Road, Kurla (Bombay).

Telephone: 87156, *Telegrams:* ALLOYS.

Introduction:—Besides Jaipur Metal Industries an account of which has appeared earlier and Kamani Engineering Corporation which is described below, this is another important unit in the famous Kamani Group of Industries. It has an authorised capital of Rs. 10,000,000 (One Crore) and subscribed and paid up capital of Rs. 40,00,000.

Equipment & Activities:—The Sheet Rolling Mill in this factory is the largest in Western India and it can roll sheets from billets of copper, brass, lead, aluminium, phosphor bronze, etc. upto 36 gauge correct to one thousandth of an inch. It can also make strips and foils upto 40 gauge. The factory is equipped for refining and reconditioning of non-ferrous scrap and making non-ferrous alloys to various standard specifications in bearing metals etc. As a part of its development scheme, arrangements are being made for importing an up-to-date automatic Sheet Mill plant which will nearly double the existing production of brass sheets in India.

Kapurthala Industries Ltd.

Managing Director: Sri Amrit Lal Anand. *Head Office:* Regal Buildings, Connaught Circus, Post Box 281, Amritlal Anand Lane, Mutony Memorial Road, Motia Khan, New Delhi. *Works:* (1) Paramjit Ganj, Kapurthala, and (2) Kalyan, Bombay. *Branches:* (1) Dadar,, Bombay. (2) Kapurthala. *Telegrams:* Office: PANELPINS, New Delhi. Works: (1) PANELPINS, Kapurthala and Bombay.

Introduction:—The Kapurthala Industries was set up in 1942. This was the first factory to start manufacture of Panelpins on an organised scale. At the time the factory was set up the prices were fabulous. The entire machinery was got fabricated by Mr. Anand himself. Ever since its inception the factory has played a big role in keeping down the prices of Panelpins in the country.

At the present moment the Panelpins Industry is facing terrible competition and the country has been flooded with large quantities of imported Panelpins.

The Kapurthala Industries also manufactures Buckets,, Trunks, Suit Cases and Persian Wheels. The firm has recently entered into an arrangement with an American concern of repute to manufacture the simpler parts of their Pumps here in India, and import only the more complicated parts. Later on it intends to go on to the manufacture of complete Water Pumping Sets of all types with the co-operation of the American concern.

Kaycee Group of Industries.

Names: (1) Messrs. Kaycee Industries Ltd., Bombay. (2) The Radio Lamp Works, Ltd., Bombay. *Managing Agents:* Messrs. Kaycee & Co., Ltd., Bombay. *Managing Director:* Mr. Kishenchand. *Factory Addresses:* (1) G. T. Road, Lahore, (2) Shikohabad, (U. P). (3) Poona. (4) Bombay. *Branch Offices:* (1) Lakshmi Mansions, The Mall, Lahore. (2) Kamani Chambers, Ballard Estate, P.O. Box No. 690, Bombay, (Head Office). (3) Mylapore, Madras. (4) Lakshmi Building, Bunder Road, Karachi. (5) 8, Hailey Road, New Delhi. (6) 3, Central Avenue, Calcutta. *Telephone:* According to locality. *Telegrams:* KAYCEE.

Introduction:—In the recent industrial development of the Punjab the contribution made by the Kaycee Group of Industries is a remarkable one. Mr. Kashenchand, the Managing Director of Kaycee Industries started at Lahore a private limited company under the title of Kaycee & Co., Ltd., in 1932 with a capital of Rs. 1,00,000. Mr. Kishenchand with his keen business acumen conceived a long range programme of creating a selling organisation as a prior adjunct to manufacturing programme. At that time, there was no Indian firm of any consequence with an all India organisation for the marketing of engineering products. Considering the financial resources at the disposal of the firm it was remarkable that during the course of 18 months, Messrs. Kaycee & Co. established their offices at Lahore, Bombay, Calcutta, Madras and Delhi.

In the year 1933, the firm was entrusted with the representation in India, of some important continental Manufacturers of

Machinery and Plants such as Swiss Locomotive and Machine works of Winterthur and Ercole Marelli C.S.A. of Milan. After successful trading for five years, the selling organisation was consolidated and projects were launched for the manufacture of Electric Lamps and Electric Ceiling Fans.

The Radio Lamp Works Ltd.

The project for the manufacture of Electric Lamps fructified in the year 1937 when a Company was started under the name and style of the Radio Lamp Works Ltd. at Karachi with a capital of Rs. 5,00,000 for manufacture of lamps which was later increased to Rs. 25,00,000/-. On account of the declaration of the war the Company had to experience many difficulties in procuring technical experts and in completing the installation. But it must be said to the credit of Company's Indian technical experts that they steered the factory through the trial period and brought it to its full stature in the year 1941. This was the time when all the lamp factories in India had begun to feel the shortage of raw materials such as glass shells, brass caps, filament wire and Moly wire.

Kaycee Glass Works.

In order to cope up with the situation the Company first took in hand the manufacture of glass shells as this forms the most important and is bulky component in the lamp. A glass factory was started at Shikohabad in 1942 under the sponsorship of the Government of U.P. With the untiring efforts of the Company's Indian technicians and the technical assistance and guidance of the Glass Technologist of the Government of U. P., the Shikohabad factory succeeded in producing good quality glass shells inception. The achievement, considering the difficulties in procuring the materials created by war, was remarkable. The factory has since been considerably expanded and the Kaycee Glass Works, which formed originally a separate Company, has been amalgamated with the Radio Lamp Works Ltd.

As the Glass Shell is a bulky article it was realised that having lamp factory in close proximity with Glass Works will effect considerable savings in overall manufacturing costs. Radio Lamp Works have now put up a new modern American Plant at

Shikohabad which is expected to come in operation during the year 1948 and has the optimum capacity of 20,000 lamps per day. This new lamp manufacturing project at Shikohabad ultimately will include their programme for the manufacture of Automobile bulbs and Flouresent lamps.

Owing to the division of the Indian territory into two dominions and consequent altered economic conditions Radio Lamp Works have sold away their factory at Karachi.

Kaycee Industries Ltd.

In the year 1942, Kaycee & Co., Ltd. floated an Electrical manufacturing concern under the title of Kaycee Industries Ltd., who have now a paid-up capital of Rs. 25,00,000/-. The main works situated at Lahore are the largest of its kind in Pakistan. They have comprehensive programme of manufacturing electrical machinery. Owing to the division of the country they are now setting up a similar factory in Bombay for the manufacture of Transformers, Exhaust Fans, Motors etc. They have a small factory at Poona which has been established for the past 22 years which specialises in the manufacture of Precision Scientific Instruments, such as Pyrometers, Voltmeters etc.

Conclusion:—Thus the Kaycee Group of Industries are run with a capital of about Rs. 75,00,000 and offer employment to over 600 workers and technicians. They are destined to play a great part in the post-war industrial development of the country. The contribution made by this group to the industrialisation of the country has been remarkable and they deserve every assistance from the Government to weather any storm that may beset them in the initial stages.

Khem Chand Raj Kumar.

Proprietor: Khem Chand Raj Kumar. *Office & Works:* Tanda Road, Jullundur City. *Telephone:* 295 and 295A, *Telegrams:* RAJKUMAR, Jullunder City.

Introduction:—This firm of Messrs. Khem Chand Raj Kumar was started in the year 1900. Manufacture of locks was the first thing taken up by the firm. Several other lines were taken up later on so that in addition to the locks the firm

is at present manufacturing agricultural implements and machinery, bolt & nuts, chains M.S., cocks & valves, drums, files, ice boxes, rivets, pans (cooking), pans (sugar), porcelain accessories, tin containers, utensils (household) buckets, tubs, heaters, coolers, sheet metal goods. It also undertakes galvanising and electroplating work.

The concern to-day has about 350 workmen.

Kirloskar Brothers Ltd.

Managing Director: Mr. Luxmanrao Kirloskar. *Office & Works:* Kirloskarvadi, District Satara. *Telegrams:* KIRLOSKAR.

Introduction:—The factory of Messrs. Kirloskar Brothers Limited is situated at Kirloskarvadi, Satara, in the province of Bombay. It was founded by Mr. Laxmanrao Kirloskar, who is still its Managing Director. Originally they manufactured buttons and pill boxes only but later on they started dealing in cycles and wind mills also. Thereafter they took up the manufacture of hand chaff-cutters also using a couple of drilling machines, a small lathe, an emery grinder and a one-horse-power engine. It was then that they erected a factory also and started the production of Iron Ploughs. Subsequently circumstances forced them to shift the factory to Kundal Station (now Kirloskarvadi). It is now a limited Company with a paid up capital of Rs. 16,47,076.

Manufactures:—The factory is producing more than 20 different types of ploughs. To these have been added many other agricultural implements such as harrows, chaffcutters, scrappers, and levellers, maize shellers, corn winnowers, mottes, bullock and hand driven rahats, sugar-cane crushers, and groundnut decorticators. Hand and power pumps for different uses are supplied. The steel furniture section is engaged on chairs, tables, shelves, hospital and office equipment, bed-lockers, cots, cradles, and spring-bedsteads, and miscellaneous products ranging from nuts and bolts to municipal water-carts.

These are all selling in the market under their well known brand 'Kirloskar'. About a thousand workers are working in the factory and their annual turn-over is measured in several

lacs of rupees. They are engaged in the manufacture of electric motors also for which a new company has now been started.

Krishnalal Thirani & Co., Ltd.

Managing Director: Mr. Krishnalal Thirani *Factory:* 46, Barackpore Trunk Road, P. O.—Belghoria, 24 Parganas. *Office:* 8, Royal Exchange Place, Calcutta. *Telephone:* Cal. 4657. *Telegram:* THIRANICO.

Introduction :—Messrs. Krishna Lal Thirani & Co., Ltd., came to be established in the year 1934 as a Public Limited Co. The capital investment in the factory is more than Rs. 3,00,000. They had obtained machinery from abroad but due to certain difficulties actual production could not begin before September 1938. Just a year after came the world war II which created great demand for various kinds of abrasives. Their products were tested and the firm was listed as an approved Contractor of I.S.S., D.G.M.P., C.C.P.M. Railway and other civil departments.

Production :—The products of Messrs. Krishnalal Thirani & Co., Ltd., include abrasives such as Glass paper, emery paper, belts, glass cloths, emery cloth, Garnet cloth, Carborundum cloth and cloth and paper combination and Discs. At present they manufacture 39,000 reams of sand paper, 2,000 reams of Emery paper, 23,000 reams of Emery cloth, 37,000 reams of Glass and 25,000 reams of other items.

Equipment :—The machinery with which they have been working is automatic and is run with electricity. The firm has got a small workshop of its own attached to the works for minor and emergent repairs.

Kushmika Iron Works Ltd.

Managing Director: Mr. Shibanitosh Ghattack. *Office:* 3, Maharshi Devendra Road, Calcutta. *Works:* 70/73, Jeliapara Lane, Salkia, Howrah. *Telephone:* Office: B.B. 4541. *Works:* Howrah 261. *Telegrams:* FERACIER.

They undertake structural and mechanical engineering work of various descriptions.

Lallubhai Aminchand.

Office & Works: 225, Tardeo Road, Bombay 7. 554, Kanasara Chawl. P. O. Box No. 2100, Bombay.

The Dun Aluminium Factory.

Messrs. Lallubhai Amichand were started over 33 years ago. They are the owners of the Dun Aluminium Factory where Aluminium, Brass & Copper utensils of all descriptions and Non-Ferrous Metals in general are produced.

Capital investment of the Company is about 50 lacs of rupees and there are about 460 labourers under its employ.

Leipzieg Chemical and Engineering Works.

Office: 38, Netaji Subhas Road, Calcutta, 12 & 13, Pran Krishna Mukherjee Road, Calcutta *Telephone:* B.B. 4745.
Telegrams: Hundal, Calcutta.

Introduction :—The life of this firm dates back to 1931, the year of its start. The administration changed hands several times, until it finally came under the control of Mr. G. S. Hundal, in the year of 1939 who is a man of great initiative and has a special aptitude for engineering and inventions. Mr. Hundal had the opportunity to come into contact with the above firm, who were at that time manufacturing machinery for Food Grain Trade in crude and unscientific methods. To improve it he volunteered to take over this firm and finally bought it in 1939.

Patent No. 33164 :—Mr. Hundal made constant experiments and designed many new types of machinery which were eventually patented. One of the machines patented, is an efficient, economical and up-to-date machinery, which can husk and split various types of grains, such as moong, urad, chhanti, arhar etc. with advantage. The exceptional advantage of this machine is that it husks and polishes the different grains simultaneously without breaking or splitting the grains, and it acts more effectively on Rice, Barley and Oats. This is supposed to be the best machine of its type in the market at present, and can prove of great benefit in the "Grow More Food Campaign".

Patent No. 33508 :—The most important patent which the firm holds is a Hose Clip, patented by Mr. Hundal. It is a double action clip stuck to its adjustment, non-slipping even under heavy strain, very durable and greatly economical in fixing and opening. Hose Clips are a common commodity of every machine commonly used in Railway, Automobiles and Aeroengines.

Equipment :—The factory is fully equipped with the latest types of Machinery in the Machine shop, Pressing and Punching shop, Fitting shop, Sheet Metal shop, Galvanizing and Electroplating, Forging and Grinding, Foundry Shop and Chemical Plants for the manufacture of chemicals.

Manufacture :—The factory is at present manufacturing the following :—

Engineering : (1) Self Contained Dal, Rice, Barley and Oat Plants.

(2) Husking Machines for :—

Dal, (Moong, Urad, Chhanti, Arhar, Muttar, etc.) Rice, Barley and Oats.

(3) Polishing Machines for :—

Dal, Rice, Barley and Oats.

(4) Elevators of every type.

(5) Screening Machines of every type.

(6) Magnetic Separators.

(7) Dryers for Grains, Tea, Coffee and Rice.

(8) Fans & Blowers.

(9) Steel Butt Hinges.

(10) Lubricators C. I. Stauffer system and sheet metal.

(11) Buckets G. I.

(12) Hose Clips and Pipe Clamps.

(13) Malleable Pipe Fittings.

- Chemical :**
- (1) Leipzieg Brand Valve Grinding Paste.
 - (2) Leipzieg Brand Brake Fluid.
 - (3) Leipzieg Brand Gasket Shalac.
 - (4) Leipzieg Brand Radiator Cement.
 - (5) Leipzieg Brand Pipe Jointing Cement.
 - (6) Leipzieg Brand Soldering Paste.
 - (7) Leipzieg Brand Pelt Paste.

Future Plans :—The factory is now making special machines to manufacture various sizes and types of Jute Mill CARD Pins. The factory has further plans for the manufacture of all sorts of Cycle Parts, Hardware Materials and Malleable Pipe Fittings.

Liluah Iron Works.

Proprietor : Sree Saradindu Guha. *Office & Works :* Guha Park, Liluah, Howrah. *Telephone :* Howrah 747. *Telegrams :* LILUAH IRONWORKS.

The concern was started in 1930 in a small rented shed with an anvil, one bellow and a few hammers and chiesels. Through continuous efforts and able guidance of Sree S. Guha it began to develop rapidly in various phases. During the last great war it produced very many industrial plants and machinery and now it is self-sufficient in its production equipments with its various departments namely pattern section, foundry (Iron & Non-ferrous), Machine shop, Welding & fitting department. The motto of the factory is to produce various industrial plants and equipments detailed in the list given below, which it is carrying on from its very inception :

HYDRAULIC PRESS UNITS for—

- (a) Plastics, Oil, Rubber and various Chemical Industries.
- (b) Forging and Riveting.
- (c) Extrusion of Non-ferrous Tubes.
- (d) Baling of different materials such as Cotton and Jute fabrics etc.

HEAT EXCHANGERS & PRESSURE VESSELS of

Mild Steel, Cast Iron, Stain-less Steel, Non-ferrous materials with Tinned (except in case of Cast Iron) or Metal sprayed surface and also of clad material,
vis.—

(a) Open Pans with coil or jacket heating arrangements with stirrers.

(b) Closed vessels with coil or jacket heating arrangements for working under pressure or vacuum with stirrers.

HEATING ELEMENTS of Cast Iron or Metal Tubes. DRY-ING CHAMBERS & COOLING PLANTS. STEAM TRAPS. BALL MILLS of different types. FILTER PRESSES of different types. METALLURGICAL FURNACES. CRANES, ELEVATORS, CONVEY-ORS. TROLLEYS. JACKS, WINCHES. PULLEYS, COUPLINGS. EXPANDED METAL.

The firm specialises in the manufacture of—

SOAP MACHINERY. OIL REFINING PLANTS. DIGES-TORS. OIL MILL MACHINERY. GREASE PLANTS. ROTARY KILNS. AUTOCLAVES. PHARMA-CEUTICAL BOILING AND EVAPORATING PANS. PENSTOCKS, REFLUX VALVES ETC. FOR SEWAGE WORK VENTILATING FANS. YARN AND CLOTH BLEACHING KIER. GALVANISING VATS.

Ludhiana Steel Rolling Mills.

Proprietor: Mr. Sohan Lal Jain, *Office & Factory:* G. T. Road, Miller Gunj, *Telephone:* 37.

Introduction:—The factory was started in the year 1939 by Seth Sohan Lal Jain. It has got a well equipped workshop which was originally meant for the maintenance of the mills but was during the war expanded to undertake fabrication work for the War Department.

Later Developments:—Recently an Agricultural Department has also been added for the manufacture of Agricultural Implements such as Juice Boiling Pans, Persian Wheels, Buckets, Chains, Troughs, Taslas, Chaff cutters etc. They are enlisted as approved contractors of the Agricultural Department of the Punjab Government.

Manufactures:—

- I Round & Squares Steel Rods upto 1 1/2".
- II. Steel Hoops from 10 to 20 Gauge.
- III. All sizes of Bolts, Nuts & Rivets.
- IV. Electric Pole Fittings.
- V. All kinds of Agricultural Implements.
- VI. Cycle & Pram parts.

New Schemes:—The mill is soon going to be converted into a joint stock company and the factory removed to a new and more spacious site where additional machinery imported from the U. K. or the U. S. A. will be installed.

Machine Manufacturing Co., Ltd.

Managing Director: Rai Sahib J. P. Agarwala. *Office & Works:*
Station Road, Lillooah, E. I. R. *Telephone:* Howrah 477.

Manufacture:—They manufacture machine tools such as 3" Stroke Slotting Machines, 13" Shapers, 25-ton Power Presses 3" Stroke, 36" Bandsaw Machines and also Paint Mixers, and 14", 4' and 5' Edge Rummer Mills etc.

Future Plans:—The Company is at present manufacturing six Bandsaw Machines per month and wants to increase its production to eight machines per month within a year.

Madras Enamel Works.

Managing Agents: Messrs. Rao & Brahman. *Office & Works:*
G. T., Madras. *Telephone:* 2646. *Telegrams:*
ENAMELSIGN.

The factory was established in 1934 and has been engaged in enamelling sign-boards and wares such as household utensils, hospital requisites etc,

Malleable Iron & Steel Castings Co., Ltd.

Managing Agents: Messrs. Praulal & Co. *Office:* 5F, Apollo Street, Bombay. *Works:* Matheradas Mills Compound, Lower Parel, Bombay.

Messrs. Malleable Iron & Steel Castings Co., Ltd. is a private limited company started in 1937.

They are manufacturers of malleable iron, high duty cast iron etc.

The number of workers under its employ is 225 and capital investment is Rs. 4,00,000/-.

Mapara Parekh & Co.

Proprietors: N. H. Mapara and K. N. Parekh. *Office & Works:* Ghod Bunder Road, Santacruz, P. O. Juhu, Bombay 25. *Telephone:* 68202, *Telegrams:* SIMPSONS.

Activities:—The factory was established in the year 1944 and has developed a wide range of activity. It is the only firm in the country manufacturing Simpson's Producer Gas Plants. Other lines of their manufacture include Imperial Gallon Containers, Water Tanks, Baby Cars, Scooters, Folding Stools, Reservoirs, Steel Cabinets and Office Furniture. They also undertake structural engineering works and execute various other jobs from Railways and Supply Department of the Government of India.

Matchwel Electricals (India) Ltd.

Managing Agents: Messrs. Kassels Ltd. *Managing Director:* Seth Mohan Lall Kathotia. *Office & Works:* Subzi Mandi, Delhi. *Branch Offices:* (1) 267, Hornby Road, Fort, Bombay. (2) 8, Royal Exchange Place, Calcutta. *Telephone:* Office & Works: 6472. *Telegrams:* MATCHWEL, Delhi.

Introduction:—With a view to extend business to meet the increasing demand Messrs. Matchwel Electricals (India) Ltd. have now taken over the running works of Kassels Ltd. who have

been appointed as their Managing Agents. It would be recalled that this factory was started only in 1945 and within this short period under the able guidance of Shri B. D. Law, the Technical Director, and other highly experienced technicians, products of very high standard are being turned out which have won recognition of discerning buyers all over the country.

Equipment and Activities :—It is worth mentioning that very high standard of specialised machinery has been made as well as imported plant has been installed increasing the capacity of production to a very great extent. It is further contemplated, the blue prints of which are under preparation, to establish a new modern factory so as to meet India's growing demand for high class electric fans and other electrical appliances. The fans that are being turned out are made generally to British Standard Specifications and all the parts are very rigidly checked and counter-checked and finished to specified tolerances ensuring an uniformly high standard of excellence and complete interchangeability. The company have now fifteen types of A.C. and D.C. fans which are being sold under the brands of "Kassels", "Lucky", "Azad", and "Anand".

In order to push this expansion programme Messrs. Matchwel Electricals (India) Ltd. have been able to get the services of Shri M. M. Kaul who has also been associated with this industry for over a decade. They have also the advantage of services of Shri K. L. Teluja who are the Managing Director of Messrs. Kassels Ltd.

Pledge :—It is the pledge of Matchwel Electricals (India) Ltd. that products of Indian manufacture and craftsmanship equal to the best imported brands would be produced by them.

Metal Press Works Ltd.

Managing Agents: Gajanand Ram Pratap & Co. Office & Works: 156, Victoria Road, P. O. Basanagore, 24 Parganas.

The factory was started in 1944 and is engaged in the manufacture of various types of sheet metal containers. It has a capital investment of 10 lacs of rupees and has about 100 workmen in its employ.

Metal Spraying Products.

Managing Agents: Messrs. Saraogi Bros. **Office:** 72/73, Old China Bazar, Calcutta. **Works:** 4, Howrah Road, Howrah. **Telephone:** PK. 4150, **Telegrams:** METSPRAY.

Introduction:—This private firm was started in the year 1943 with a capital of Rs. 300,000 and has the credit of being the first to introduce Metal Spraying in India.

Activities:—The firm is mainly concerned with metal spraying for which purpose it manufactures a metal spraying pistol under the trade name of 'MSP'. It also manufactures a large part of the ancillary equipment required such as Sand-blasting machines and Air Filters.

Metal Spraying:—It is a process of applying molten metal to a surface under air pressure and the main instrument is a pistol or gun that both melts the metal, commonly by the oxy-acetylene flame, and throws it on to the surface to be sprayed. Any metal can be sprayed on to any surface even glass, cloth, paper etc., that has been suitably prepared.

It will be realised that the applications of such a process must be numerous and, indeed, metal spraying has spread over a wide field of industry in the United Kingdom and the U. S. A., in particular. Here too, in India the list of industries to-day applying Metal Spraying include Breweries and Distilleries, Chemical Works, Collieries, Cotton and Textile Mills, Engineering Companies, Jute Mills, Flour Mills, Oil Refineries, Mines, Ordnance factories and Arsenals, Paper Mills, Railways, Ship Building and Sugar Mills, Transport Companies, Tanneries, and Leather Works, Tobacco Factories etc.

Broadly speaking, metal spraying is applied in the rebuilding of worn machinery like shaftings, rams, rollers, bearings, pistons, etc., in the filling of blow holes in castings, and in the field of anti-corrosion work either chemical or atmospheric, such as fermenting vats, petrol tanks, food containers, under-carriages, and marine and constructional work of all descriptions. It has

also a large field of utility in the decorative sphere. The process effects a considerable economy in replacement and maintenance costs. In short, it is of the greatest utility in the repair, reinforcement, restoration and protection of machinery.

Metropole Works.

Proprietor: Rai Sahib L. Chhabil Das Bhatia. *Office & Works:* Verka, Amritsar. *Telephone:* 743. *Telegrams:* METRO-POLE, Amritsar.

Introduction:—The factory started in the year 1934 as Major Contractors to Hydro Electric Branch, Punjab, for supply of H. T. and L. T. Line Materials, and for the erection of Transmission Towers.

They have since supplied various stores such as Motors, Electric fans, Lead tee boxes, Aluminium Link tee boxes, Galvanized Mild Steel Bridle Clamps and Vibration Damper Clamps, and numerous other miscellaneous stores to the P.W.D. Electricity Branch. When the war broke out they executed a large number of Military War Orders of the nature of high priority and against operational demands for supply of various types of stores, such as Electric Ceiling fans, Motors Fractional Horse Power, Grinders, Electric Drilling Machines, etc. Besides the stores manufactured for the War efforts they have been keeping pace to meet with the Civil demands also. They are specialised in the manufacture of fans of all sorts, *i.e.* ceiling fans, pedestal fans, table fans and exhaust fans. The average number of ceiling fans manufactured during the War period has been 1,000 monthly besides Electric Motors, Drilling Machines, Polishers, Electric Blowers etc. The number of Workmen and Staff employed during the war period had been up to 1,800 approximately.

Present Position:—The works have adequate works machinery and equipment etc. valuing rupees twenty five lacs approximately comprising of Lathes, Shaping Machines, Planing Machines etc., and as such, have an extensively large capacity for the manufacture of their products *i.e.* A. C. and D. C. Pedestal, Ceiling and Table fans, Electric Motors, Electric Bench Pattern Grinding, buffing and polishing machines, *

Drilling Machines, Electric Blowers, Vices, Smith Hearths, Smith Forges and Electric Line and Distribution material etc. The daily output of fans of all sorts goes upto 40 to 50 fans. They can undertake Casting, Welding, and Galvanising Works of every description. The works have manufactured a very large quantity of Wooden Tube Well Strainers for the Punjab Irrigation Department.

Motor House (Gujarat) Ltd.

Managing Agents:—Messrs. Mehta & Co. *Office*. Haroon House, Bazar Gate Street, P.O. Box No. 1068, Bombay 1. *Works*. Bombay Agra Road, Bhandup (G.I.P.).

Messrs. Motor House (Gujarat) Ltd. was started with an approximate capital investment of Rs. 24,00,000/- to manufacture motor vehicles.

Mukand Iron & Steel Works Ltd.

Managing Agents: Messrs. Jeewan Ltd., 51, Mahatma Gandhi Road, Bombay. *Office & Works*: Signal Hill Avenue, Bombay 15. *Branch Office*: 2/A, Elgin Road, Calcutta. *Telephone*: 46041 & 46042. *Telegrams*. STEEL, Bombay.

Introduction:—This Public Limited Company was established in 1937. They installed Electric Arc Furnaces both at Bombay and Lahore Works for smelting and refining of steel. They have erected latest type of Muffled Annealing Furnaces. Castings annealed in them are fine specimens of technical skill and competence.

The War (1939):—When the War came, Mukand's entire production was switched over for Government requirements and was controlled by the Director General of Munitions Production and the Iron and Steel Controller.

Their rolled tested steel went through the length and breadth of the country and even to the Middle East for essential military operational demands.

Manufactures:—Mukands are to-day in a position to successfully undertake steel castings of the most intricate nature, heavy or small, the quality of steel being to the required

specifications. They are at present producing all kinds of steel and iron castings required for railways. They are also manufacturing parts of machinery for sugar, textile, and cement, oil and other industries. Recently they have started the manufacture of LOOM SPINDLES. These spindles stand comparison with the best of foreign spindles. The entire process right from the manufacture of special steel, best suited for the purpose, to the polish of the finished spindles is done by themselves. This new line of manufacture has been very much appreciated by the industries concerned.

The latest achievement of Mukands is the manufacture of FILES. This is a new enterprise in the country. After a series of long and strenuous experiments Mukands are producing Files that have stood the test of Government Laboratory and actual use and are now approved as the standard FILES. The FILES of almost all types, Flats and Squares, Bastard, Second-cut and Smooth are manufactured by them. They have installed the File-cutting machines and introduced the latest hardening and sand-blasting equipments.

Labour :—The total number of labourers employed by them is about 850, out of which about 350 are skilled labourers.

Future Plans :—Messrs. Mukand Iron & Steel Works Ltd. have a big expansion project on hand. They are constructing a new factory at Kurla, under project No. DNZ/6 of the D.G.I.S., New Delhi, where they propose to make 300 tons castings per month. Their capacity of Re-Rolling and other items will also increase by a great proportion. This work is rapidly progressing.

Mysore Iron & Steel Works.

Proprietors: The Government of Mysore, *Office & Works:* Bhadravati, Mysore. *Telegrams:* MYSIRON.

Introduction :—The construction of the Mysore Iron Works at Bhadravati, was started in the year 1918. The construction was completed by the end of 1922 and the works started operations in early 1923. The plant originally comprised of a *Blast Furnace* and a *Wood Distillation Plant* only.

Subsequent additions have continued and the works at present comprise :

A modern Charcoal Blast Furnace with a capacity of 80 tons of pig iron per day.

A Wood Distillation Plant with 16 oven retorts for carbonising about 250 tons of wood per day together with—

(a) a By-Product Plant for treating the pyroligneous liquor obtained, and

(b) a Tar Distillation Plant.

A Pipe Foundry with a capacity of about 40 tons of C. I. Pipes to B.S.S. per day.

A General Foundry for making Pipe Specials and miscellaneous iron castings.

Two Basic Open-hearth Furnaces each with a capacity of 25-30 tons per heat.

A Rolling Mill for the conversion of the steel ingots to Mild Steel Sections, with a capacity of 80-100 tons per day.

Electric Furnaces and a Steel Foundry for manufacturing manganese, carbon and alloy steel castings.

A Ferro-Alloy Plant consisting of two furnaces with a capacity of 900—1,000 tons of Ferro-silicon per annum.

The other sections consist of a Structural Shop for the fabrication of steel structure for buildings, electric transmission towers, etc., and Brick Plant for manufacturing bricks and refractories.

The Plant is provided with a Pattern Shop, Machine Shop, Boiler House, Power House and other auxiliaries.

A gravitational ropeway down the Kemmangandi Hills, about 25 miles from the Works, and a net-work of tramways extending to the neighbouring forest areas serve to bring the ore, limestone and wood required for operation.

A Formaldehyde Plant with a capacity of about 4-5 tons per month and a Bakelite Plant for the manufacture of sythetic resins have also been installed.

A pilot plant for the manufacture of Acetic Acid is also put up. Sodium Acetate, Aluminium Acetate and Para-Formaldehyde are also being manufactured.

Post-War Developments:—The following developments and additions to the plant are under consideration:—

(1) *Pig Iron*—Increasing the output of pig iron almost immediately to 42,000 tons per annum by installation of an Electric Pig Iron Furnace of 15,000 K. V A. capacity with a rated capacity of about 140 tons per day. It is proposed to duplicate the plant and increase the pig iron capacity to 1,00,000 tons per annum as early as possible.

(2) *Steel*—Following the installation of the Electric Pig Iron Furnace, both the existing Open-hearth Furnaces will be put into operation and the steel ingot production will be raised to 60,000 tons per annum.

A target production of 1,00,000 tons of finished steel is being aimed at through the installation of cogging and structural mills, tube mill and sheet mill.

(3) *Tube Mill*—The proposed capacity is 10,000 to 12,000 tons of seamless tubes per annum.

(4) *Steel Foundry*—The Steel Foundry is being expanded to be able to meet the entire demand of steel casting in South India, inclusive of the requirements of the Railways. An additional machine shop for the steel foundry is under erection.

(5) *Special Steels*—The manufacture of stainless steel is under active consideration.

(6) *Glacial Acetic Acid*—Negotiations are under way for the purchase and erection of a plant for the manufacture of Glacial Acetic Acid direct from pyroligneous liquors.

(7) *Cement Plant*—To meet the growing demand for cement, it is proposed to instal an additional plant of a rated

capacity of 150 tons per day and gradually increase the production to about 1,00,000 tons per annum.

The Works provide employment for about 8,000 people.

Mysore Kirloskar Ltd.

Managing Agents Messrs. Kirloskar Brothers Ltd. *Office & Works.* Harihar (Mysore State). *Telegrams:* MYTOOL.

Introduction:—The Mysore Kirloskar Ltd, was started in the year 1941. At this time on account of the war going on the demand for machine tools was naturally large so that a new field was opened before the Indian manufacturers to manufacture machine tools.

Messrs Kirloskar Brothers Ltd., who had been experimenting with the manufacture of machine tools in pre-war days established a factory at Harihar in the State of Mysore with a capital of rupees ten lakhs and started functioning early in 1942.

As the Government of India also wanted the development of this industry, they gave balancing plants to five large machine tool manufacturers in India, the Mysore Kirloskar Ltd, being one of them. This enabled the concern to step up production with added impetus on a still larger scale

Mysore Premier Metal Factory.

Proprietor Mr Himchand Shah and Mr Keshab Lall Shah *Office* 124, Mint Street, G T. Madras. *Works:* Tondiapet. *Telephone* 2535 *Telegrams* SUNBRAND.

Introduction:—The Mysore Premier Metal Factory was started in Bangalore 30 years ago for manufacturing brass utensils. It was purchased by the present owners in 1926 and was run at Bangalore until the middle of 1939. On account of the exigencies of the war, the Government acquired the site where the factory was located and it was decided to locate the factory at Madras where it has been working since June 1939 with a capital of over Rs. 5 lakhs.

It was in 1936 when Mr. Himchand Shah, after the death of the former proprietor, acquired the factory.

"Sunbrand," stainless steel articles made at the factory have acquired a good reputation. The other lines of their manufacture are:—aluminium ware, brass utensils, copper ware, German silver ware, brass, aluminium and German silver castings of all descriptions. They also manufacture industrial and hospitals equipment such as steel condensers and heaters. They as well undertake electro-plating in nickel, silver, gold and copper. They are pioneers in introducing stainless steel articles for household purposes. The factory is one of the selected manufacturers by the Government under the Brass Ware Control Scheme.

Nathmal Girdharilal.

Office. 22, Burtolla Street, Calcutta. *Works* 108, Benares Road, Howrah.

This private concern came into existence in 1930. They are engaged in the manufacture of steel furniture, safes, cabinets, cash boxes and steel trunks etc.

National Bearing Co., Ltd.

Head Office & Works P.O. Jaipur (Rajputana). *Branch Office:* 1-A, Vansittart Row, Calcutta.

Introduction:—The vital importance of Ball & Roller bearings in the field of Engineering is now well known to all. In every Mechanical & Electrical device where rotary motion is used, there is a potential demand for bearings. This demand is ever increasing and with the industrialization of India the increase is more rapid, making it essential for this product to be made in the country. It was the realisation of the fact that India had no such vital Industry, that led the promoters of this company to form the National Bearing Co., Ltd. in 1946.

The Factory:—The Company has a well laid-out plan for its factory in Jaipur which is to be equipped with the most

up-to-date machinery to enable the production of quality bearings in the country. Under an agreement with the reputed Hoffman Manufacturing Co., Ltd., Chelmsford (England), they have succeeded in securing the services of technicians of great ability and vast experience in this line. More than half the machinery required has already arrived and some more is on the way.

Conclusion:—It is expected that the Company will commence production now within a year when India's growing industrial establishments can safely look to and depend upon this firm for supply of all kinds of bearings of high precision and workmanship.

National Insulated Cable Co. of India Ltd.

Head Office: 'Stephen House,' 4, Dalhousie Square East, Post Box No. 594, Calcutta—1. *Works:* Shamnagar, (24 Parganas, West Bengal). *Managing Agents:* Associated Industrial Development Co., Ltd., Calcutta. *Telegram:* 'MEGOHM,' Calcutta. *Telephone:* Head Office: City 5102 (4 Lines). Works: Bhatpara 33 (2 Lines). *Branch Office:* Kashmere Gate, Delhi. *Agents:* Bombay—Chimanlal Vadilal & Co., 80, Abdul Rehman Street, Bombay 3. Madras—P. Natesan & Co., Ltd., 10, Mound Road, Madras 2. Mysore—Emberuman & Co., Krishna Bldgs., Avenue Road, Bangalore City. United Provinces—Hindusthani Kam & Co., Marble Road, Kanpur. Orissa—United Enterprises Ltd., 10, Cantonment Road, Cuttack.

History of the Company:—India's output of Electric Cables and Wires in the pre-war years was not adequate to her needs and the situation was considerably aggravated during the war by the terrific increase in the demand for these types of stores for Defence purposes. Notwithstanding the fact that the Industry of making Cables and Wires was practically unknown to Indians, certain national minded industrialists ventured on the floatation of a Company for this purpose, and the National Insulated Cable Co. of India Ltd. was ushered into existence in 1942. After operating at Mehgaon in the Central Provinces during the war for strategic reasons, the Company located its factory at Shamnagar (West Bengal) where it produces all

types and sizes of Cables and Wires which are in great demand in the country. The Factory is very modern, well laid out and equipped with the most modern plant. It is owned and controlled entirely by Indians. At every stage of development, it has received the support of the Government and the various Industries in the country.

Production :—The range of manufactures of NICCO, are

- (1) Hard Drawn Bare Copper Solid Conductors.
- (2) Hard Drawn Bare Copper Stranded Conductors.
- (3) Annealed Soft Drawn Bare Copper Wires.
- (4) Annealed Tinned Copper Binding and Fuse Wires.
- (5) V. I. R. Insulated Cables.
- (6) V. I. R. Insulated Flexible Cords.
- (7) Motor Car Ignition Cables.
- (8) Electrolux (Fittings) Wires.
- (9) Bell and Telephone Wires.
- (10) Flexible Lift Cables.
- (11) Aerial Cables.
- (12) V. I. R. Insulated Lead Alloy Sheathed Cables.
- (13) V. I. R. Insulated Tough Rubber Sheathed Cables
- (14) Cotton Covered & Cotton Braided Instrument Wires.
- (15) Silk Covered Instrument Wires.
- (16) Enamelled Copper Wires.
- (17) Aluminium Conductors Steel Reinforced.

Quality of Products :—Pending the formulation of Indian Standard Institution Specification all production in the NICCO Factory are to appropriate British Standard Specifications. In addition to rigid tests carried out by the Company's own Testing Laboratory, all V. I. R. Cables produced are tested under arrangement with the Government of India by the Inspection Wing of the Directorate General, Industries & Supplies, Government of India. Every coil of Cable released by NICCO bears the signed and sealed certificate of the Director of Inspection (Metallurgical), Government of India, Tatanagar.

Prices :—The prices of NICCO products are very competitive compared to other products of approved Specification quality both local and imported. It is a motto of NICCO that in appealing to a customer to prefer a cent per cent

indigenous article, he should not be placed at a disadvantage, either in price or in quality.

Sale of Products :—The Company has established a Branch in Delhi and Agencies at other important centres so as to facilitate the holding of stocks and prompt service to customers.

Nicco is on the Annual Rate Contracts for Cables and wires awarded by the Government of India and on the list of approved Contractors of all Provincial and State Governments, Electric Supply Undertakings and Industrial concerns. The support and patronage that Nicco has received from all these authorities is very encouraging.

Raw Materials :—Electrolytic Copper is the most important raw material for the industry and this is procured from abroad in Wirebar form by the National Rolling Mills Ltd., Sharnagar, and rolled into 'Black Copper Rods' which form the basic raw material for the Wire and Cable Industry. All other raw materials are obtained in India.

Labour :—The Company employs about 550 workers. The relationship between the Management and the workers is cordial.

National Iron and Steel Co., Ltd.

Managing Agents Messrs. Nursing & Co., Ltd. *Office:* 'Stephen House,' 4, Dalhousie Square East, Calcutta. *Works* P.O. Belur, Dist. Howrah. *Telephone:* Office: Calcutta 3194 (5 lines). Works Howrah 670 (2 lines). *Telegrams* MISCOWORKS, Calcutta.

Introduction :—The National Iron & Steel Co., Ltd., was floated in 1935 with an authorised capital of Rs. 50,00,000/- of which Rs. 49,96,000/- is paid up. The Company was started with the primary object of utilising the huge quantity of scrap available in India which till then found its way to Japan to feed the Steel Industry there. In 1934 Mr. J. N. Agarwal, a senior partner of Messrs. Nursing & Co., went to Japan to gather first-hand knowledge and experience of the working of re-rolling industry in that country and there he negotiated for the purchase of a rolling plant. Eventually in 1937 a 10 ton

electric furnace was set up for making steel from scrap and then rolling it into finished sections in the rolling mills. In the beginning the management secured Japanese co-operation, but it did not last long. The outbreak of the World War II gave a fillip to their activity and brought them closer to the goal visualised by the founders.

Very recently, another 1 ton Electric Furnace has been installed for the manufacture of high quality steel.

The war afforded the Company an opportunity for making its own open-hearth steel billets. At the instance of the Government, it has commenced construction of a 25 ton open-hearth Furnace for the manufacture of M. S. billets which shall be in production no sooner the mechanical appliances are made available from U. K. It is expected that when this furnace is in operation, the production of steel will increase five times. Already it is recognised as A class rolling mill.

Production:—The capacity of the rolling mill is about 4,000 tons per month varying from $\frac{1}{4}$ " to $2\frac{1}{2}$ ". The output of the Electric Furnace is about 2000 tons per month. During the period of the war the production of the Rolling Mills was confined to smaller sections only *viz.*, rounds, squares and flats. The heavy demand of these sections would not permit rolling of angles, channels, tees, etc.—which is, however, in the purview of the management.

The Electric Furnace is equipped for manufacturing quality steel, namely, Spring Steel, Tool Steel, High Carbon Steel and other alloy steels.

In addition to the re-rollable scrap and steel ingots made at the works, the Rolling Mill uses a large quantity of M. S. Billets for which it depends on the local main steel producers and to some extent on imports. The firm have, however, their own plant under way to manufacture the same.

Departments : Foundry:—Alongside the Rolling Mills, it has laid out a big steel-foundry with a monthly output capacity of 200 tons of black castings and near about 150 tons of fettled castings. The foundry is 75 per cent. engaged in the

manufacture of wagon components for all the State Railways principally the East Indian Railway.

C. I. Foundry:—For the maintenance side of the works, there is a Cast Iron Foundry with a capacity of 250 tons per month. In addition to the maintenance job, this foundry is capable of doing substantial work for the market.

Brass Foundry:—The brass foundry was also designed originally for the purpose of maintenance, but it is now being extended to undertake manufacture of all kinds of non-ferrous rollings and sheet mills.

Bolts and Nuts Shop:—Attached to the main Works is Bolts and Nuts Shop which is fabricating bolts, nuts, dog-spikes, rivets etc. The output is 30 to 50 tons a month.

Machine Shop:—This shop has been developed to perform machining jobs of all varieties. This shop also turns out machines for maintenance of the main Works.

The management are contemplating the manufacture of high class machines which are not being manufactured in India at the present.

Recently they have been working a Wire Rope Plant, part of which has already been completed.

Structural Shop:—The Structural Shop of the National Iron was originally meant for the erection and construction of the Works itself. This shop has done construction work for the sister concern *vis.*, the National Screw and Wire Ltd. The open-hearth furnace of the factory is also the work of this shop. The structural shop has done several jobs of steel fabrication for the Government also. The management are also earnest in developing a fully equipped structural engineering factory for fabrication of building structurals, bridges etc. At present it undertakes all kinds of structural fabrication and the capacity of the shop, as it is, ranges from 250 to 300 tons per month. The management are negotiating purchase and installation of additional plants with a view to supplementing the output of the shop to the tune of 400 to 500 tons per month.

New Schemes :—The management have under consideration the manufacture of shafting, steel pipes and other conveying materials also. Further they have in view the development of a first class smithy and forging shop for the manufacture of all kinds of tools, agricultural and tea garden implements which form considerable part of India's import trade. They have also in hand a scheme for setting up a roll foundry. They aim at making the works complete by itself, in as much as to make it self-sufficient for the manufacture of all kinds of mechanical and power plants embodying the latest scientific discoveries and achievements.

Labour :—The labour employed in 1936 was 278. Now it engages over 500 skilled and about twice as much unskilled labourers in its various departments.

National Metal Industries, Ltd.

Managing Agents: Messrs. Amritlal Ojha & Co., Ltd. *Office:* Security House, 23-B, Netaji Subhas Road, Calcutta.
Works: 1, Bagzala Road, Dum Dum. *Telephone:* *Office:* Cal. 6476-77, *Works:* Dum Dum 5, *Telegrams:* NAME TAL, Calcutta.

Introduction :—The National Metal Industries Limited were established in 1931 with a capital of Rs. 1 lakh. In 1944 the management passed on into the hands of the present owners and the capital was increased to Rs. 10 lakhs, 7½ lakhs being subscribed and paid-up. The factory has been re-organised and is working day and night shifts.

The factory has various types of power saving, milling, shaping, and polishing machines. It has also got a non-ferrous foundry and equipment for electro plating, soldering etc.

Manufactures :—The National Metal Industries Limited manufacture umbrella fittings of all kinds, building materials, water fittings, gun metal, brass fittings, buckets, drums, tug manufacturing hinges, rivets, ferrous and non-ferrous materials, washers, bolts, nuts, screws, and locks etc.

Tele { Phone : WEST 955
Gram : EQUIPMENT.

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Established in 1942 as the first Non-ferrous Hot Rod Rolling Mill in India, this Company has successfully met the entire demands of the Cable Manufacturing Industries for Copper Rods. At present the Company is rolling Electrolytic Copper Wire Bars to rods of - - - sizes from $\frac{1}{4}$ " upwards - - -



The National Rolling Mills, Ltd.

Managing Agents:

The Associated Industrial Development Co., Ltd.

Office: STEPHEN HOUSE.
4, Dalhousie Sq., CALCUTTA.
Phone : City 5102 (4 Lines).

Works: MULAJOE,
via SHAMNAGAR, E. I. Ry.
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D. K. DAS & CO., LTD.

PROPRIETORS:

BANTRA ENGINEERING WORKS

232, Beliata Road, HOWRAH.

Present Position :—The Company is at present working to its capacity and employs about 400 workers. When the extensions are completed, the Company expects to employ over 1,000 workers.

National Rolling Mills Ltd.

Managing Agents: The Associated Industrial Development Co., Ltd. **Office:** Stephen House, 4, Dalhousie Square, Calcutta. **Works:** Mulajore Via Shamnagar, B. & A. Rly. **Telephone:** Office: Cal. 5660 (9 lines). **Telegrams:** MEGOHM, Calcutta. **Works:** BHATPARA 32.

Introduction :—This Company was established in July 1942 for the purpose of manufacturing Electrolytic Copper Rods in sizes and lengths suitable for the Electric Cable and Wire Manufacturing industries.

Prior to the establishment of this Company, all Copper Rods had to be imported from abroad. The sponsors of this Company, therefore, decided that it would be in the interest of India and furtherance of war efforts to establish a Non-ferrous Hot Rod Rolling Mill in India. Fortunately a complete Rolling Mill plant was available for immediate shipment, and arrangements were made for importing the Mill.

The Rolling Mill of the Company is the first of its kind in India. With the manufacture of Copper Rods for the Cable Manufacturing Industries, the country now has to import only Electrolytic Wire Bars. The mill is equipped with up-to-date machinery and is rolling at present Electrolytic Copper Wire Bars and rods of sizes from 1/4" upwards.

Activity :—At present the Mill is engaged in rolling Electrolytic Copper Rods in commercial lengths from Electrolytic Copper Wire Bars. It is also in a position to undertake similar manufactures in Brass, Aluminium and other Non-ferrous Metals.

This Company is equipped to meet the entire demands of the Cable Industry in India and do away with the necessity of importing Copper Rods from abroad.

National Sand Paper Mills (India) Ltd.

Proprietor: Mr. Narindar Nath Mohan. *Factory & Office:*
Ghaziabad, U. P. *Telephone:* 706, *Telegram:* SERVICE.

Introduction:—The National Sand Paper Mills (India) Ltd. was started in 1941 as a public limited company and is located in Rawalpindi. The capital investment in the factory is Rs. 500,000.

Equipment:—The factory is equipped with machines such as the gluing machine, printing machine, cooling box, Pneumatic section table, Festooning and Drawing Apparatus, Cutting machine and Gluing boiler etc. The sieving process has been improved by the addition of new machines with satisfactory results.

Production:—During the war the factory enjoyed a period of prosperity and worked to its entire capacity to meet the heavy civil and military demands.

The items of their manufacture include Sand paper, Emery paper, Emery cloth and Glass cloth, Emery tape etc.

National Screw & Wire Products Ltd.

Managing Agents: Messrs. Nursing & Co. *Office:* Stephen House, 4, Dalhousie Square, Calcutta. *Works:* Belur (E. I. R.). *Telephone:* Office: Cal. 3194, *Factory:* Howrah 670, *Telegrams:* NASCO.

Introduction:—The National Screw & Wire Products Ltd., was floated in the year 1941 at the instance of the Supply Department of the Government of India for fabrication of wire, nails and screws both ferrous and non-ferrous. The authorised capital of this concern is Rs. 20,00,000.

(399)
LIBRARY OF THE
NATIONAL IRON & STEEL CO. LTD.

The plant and machinery of the company were procured from within India through the intervention of the Government from Messrs. Devidas Jethanand & Co. of Karachi who had purchased them some time back from Germany.

The National Screw & Wire Products have three departments *vis* :—

- (1) Wire Drawing,
- (2) Nails &
- (3) Screws.

Items of Manufacture :—Among the smaller producers of wires and nails the National Screw & Wire Producers Ltd., is one of the few properly organised firms. The capacity of the Wire Drawing Section as already pointed out is about 100 to 150 tons per month; that of the Nails between 50 to 70 tons per month; and that of the Screws is 2,88,000 pieces per month. The capacity of the respective departments, however, depends on the gauge or size of the materials they fabricate.

The products are manufactured to the Indian Standard Specification and are capable of being further improved.

The raw materials required for the manufacture of wires and nails are manufactured by their sister concern the National Iron and Steel Co., Ltd.

Future Outlook :—They have decided to set up a Wire Rope Plant also which is being manufactured for them by the National Iron & Steel Co., Ltd., and is expected to be in operation in the very near future.

There is also a non-ferrous foundry which is being extended to provide raw materials for non-ferrous products.

The company also possesses a plant for manufacturing shoe-tacks. It will be put into operation shortly.

New Standard Engineering Co., Ltd.

Managing Director: Mr. J. V. Patel, A.M.I.Mech.E., A.M.I.E.

Managing Agents: Messrs. J. V. Patel & Co., 22, Bellasis Road, Byculla, Bombay 8. **Office:** 222, Bellasis Road, Byculla, Bombay 8. **Works:** (1) Bellasis Road, Bombay 8. (2) Carroll Road, Adjoining David Mills, Parel, Bombay. **Telephone:** Office: 42587. Works: 42587 & 61275. **Telegrams:** COOPCOMP

Introduction:—The Company was started by the Managing Director Mr. J. V. Patel as a small machine shop in 1939 and his pioneering spirit and untiring zeal are in evidence throughout the progress of the Company. After about a year a foundry and facilities for welding were added. Production of Wallsend Patent Oil Burning Equipment was undertaken in collaboration with a British firm (Messrs. Heatly & Gresham Ltd.) under franchise from the parent British licencees. A range of centrifugal blowers was developed for use with the above oil burning equipment. A design of power drilling machine was also put on the market and the war years provided an opportunity to manufacture a variety of engineering equipment requiring various degrees of skill and organisation, which came handy when tackling fresh designs of industrial machinery.

Present equipment and contemplated additions:—The present equipment comprises a *machine shop* with approximately 40 machine tools, *foundry* with two cupolas with mechanical charging equipment, modern designs of moulding machines and other compressed air tools. The *welding shop* is equipped to carry out both gas and electric welding suitable for turning out a range of steel structures, engineering equipment and plant. There is a *forge shop* in addition, equipped with power hammer.

The production equipment is in the process of being moved to a two acre plot of land where the welded steel structure for the factory, designed, fabricated and erected by the Company is put up and being supplemented. The intention is to lay out this factory on modern lines and equip it as such, including amenities for workmen.

A considerable part of the Company's production is highly standardised and plans are constantly in hand to put others on the same basis.

Manufactures :—

Regular production and Stock Items :—

Drilling Machines $1\frac{1}{4}$ " and $\frac{1}{2}$ ".

Steam Traps $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{2}$ ".

Compressors, Single Stage 6.5 cu. ft. per minute
& 13 cu. ft. per minute.

Centrifugal Blowers, from 100 to 2500 c. ft. per min.,
3" to 28" w.g.

Centrifugal Pumps , $2\frac{1}{2}$ " $\times$ 2". Rotary Pumps 1".

Hand Press, 10 tons, Power Press, 5 ton. Saw Benches
8", 14".

Brass Wire, Brass & Builder's Hardware.

Manufactured to Standardized Designs :—

Stacking Machines for ware houses, $2\frac{1}{2}$, 5 and $7\frac{1}{2}$ cwt.

Fire Fighting Trucks.

Ball Mills, Grinding Mills, Pug Mills.

Tanks, Agitators, Mixers, Heaters.

Steam heaters, dryers.

Cupolas and Engineering Furnaces—heat treatment,
melting, stationary and rotary.

Tar Boilers.

Castings :—The present production of grey iron castings of a variety of types will shortly reach 100 tons per month, and the categories include castings for diesel engines, pumps, electric motors, compressors, machines tools, etc., some of these for well-known engine and machinery builders.

Structural Steel Work :—Steel frame buildings and bridges of limited span are now being undertaken in the structural welding shops.

Clientele :—The Company's clientele includes the various engineering, chemical and other industries, the Indian Government Railways, the Directorate General of Industry and Supply, premier Indian States, etc,

Ogale Glass Works Ltd.

Managing Agents: Messrs. S. P. Ogale & Co. *Office & Works:*
Ogalvadi, Dist. Satara (Aundh State). *Telegrams:*
'GLASWORKS'.

Introduction:—They started in 1914 as a proprietary concern and were converted into a limited liability Company in 1919. Till 1924 they handled only the manufacture of glass. In 1925 a Metal Section was also added to the works for the manufacture of hurricane lanterns from iron and tin sheets. Subsequently one Enamelling Department was also added. The capital invested at present is Rs. 10,00,000/-. They are equipped with about 40 power presses and 20 lathes, shapers and drilling machines manufactured locally by the Mysore Kirloskar Ltd.

Production:—At present they produce about 1,000 lanterns per day of 8 hours working and have got 400 skilled and unskilled workers working in the factory. Their 'Prabhakar' brand Hurricane Lanterns are now well known in the market and are almost as good as American Dietz Lanterns. During the war they supplied 7,00,000 lamps to the Stores Department of the Government.

Future Plans:—They intend to raise their capital to Rs. 15,00,000 in the near future and replace their present set of dies and punches with modern tools and machinery imported from abroad. They also wish to send a band of their technical men to the continent to learn the modern and economical technique and methods used in European metal industry.

Conclusion:—With the grant of protection to the industry recently announced by the Government their various schemes of expansion and improvement are likely to fructify soon and they feel confident of their ability not only to meet the Indian demand for lanterns but to be able to export also.

Orient Industrial Engineering Co., Ltd.

Managing Agents: Messrs. Rungta Sons Ltd. *Office:* P-15,
Kalakar Street, Calcutta. *Works:* Jugsalai, Tatahar

(Singhbhum). *Telephone*: Office: B.B. 3655 and 6627, Works: 313, Jamshedpur. *Telegrams*: SELLERS, Calcutta.

Introduction:—The Orient Industrial Engineering Co., Ltd. is one of the Rungta Group of Industries and was started in 1944 primarily for the manufacture of Telegraph Poles. Ever since the factory came into operation, the full capacity was utilised for manufacturing materials for the Supply Department of the Government of India. 7,500 tons of iron and steel materials were produced for the Department to their satisfaction.

Future Outlook:—Rai Bahadur M. G. Rungta, the Managing Director of the Company recently paid a visit to the U. K. and the U. S. A. to procure new machinery. When their plans of expansion are materialised they intend taking up the manufacture of several new items such as steel furniture, buckets, drums, wire, wire nails and screws etc.

Orient Safe & Cabinet Mfg. Co., Ltd.

Managing Agents: Messrs. Kashiram Banaresilall. *Directors*: Mr. Banaresilall Kedia. Mr. Ramnath Sharma. Mr. Jaganath Prasad Agarwala. Mr. Tejpal Agarwala. *Head Office*: 83, Old China Bazar Street, Calcutta. *Show Room*: 133, Canning Street, Calcutta. *Factory*: (1) 8, Ramlall Mukherjee Lane, Salkia, Howrah and (2) 10/5, Sitanath Bose Lane, Salkia, Howrah. *Phone*: Head Office: B.B. 2104. Show Room: B.B. 5893. Factory: How. 724. *Gram*: BHAIKASHI.

Introduction:—The Orient Safe and Cabinet manufacturing Co., Ltd., has been registered as a private limited company with Messrs. Kashiram Banaresilall as Managing Agents. The company has since acquired two factories one at 8, Ramlall Mukherjee Lane, Salkia, Howrah and the other at 10/5, Sitanath Bose Lane, Salkia, Howrah. Messrs. Kashiram Banaresilall, are now widely known in the field of engineering and Industrial enterprises and of late have come in the lime light of Calcutta industrialists. The company naturally has kept pace with the onward march of progress in production both in quantity and quality.

Manufactures:—It is producing high class fire-proof and burglar resisting jointless steel safes, cabinets, strong room doors, cash boxes, locks and pad-locks etc. The peculiarity in the production is the beauty along with the strength and resistance. It is really gratifying that out of a small trunk manufacturing concern this company sprang up as a sound industrial centre with sound production of sound stuff.

Future Outlook:—The Managing Agents are ambitious people and the scope that is offered to the company augers a bright future. The present production in quantity and quality, inspite of hard time, goes to show that it is being run under sound and healthy atmosphere and the scheme in hand will one day lead to a progress unprecedented in its field.

Paul's Engineering Co.

Office & Works: 207, Belilious Road, Howrah. *Telephone:* Howrah 965.

Introduction:—This partnership firm was established in 1941 with a workshop of two Lathes and one Drilling Machine. Since then it began to make progress under the able guidance of one of its partners Mr. S. N. Paul, and after a year the workshop stepped up to Machine Tool production and Lathe Chuck Manufacture was specialised. The first Chuck produced by the Firm interested Messrs. Marshall, Sons & Co. (India) Ltd. very much and they were pleased to be the firm's Sole Selling Agents in India. Mr. Paul himself is a mechanical engineer and he has designed some special machines for the betterment of Chuck Manufacture.

Manufacture:—The firm at present manufactures various machine tools, such as Lathe Chucks, Lathes etc. of different sizes, and other General Engineering items.

Future Plan:—For the purpose of its development project the company has acquired land, where erection work has already been started.

Peepul Iron & Steel Industries Ltd.

Managing Agents: Messrs. D. H. Brothers Ltd. *Office.*
La-touche Road, Kanpur. *Works.* Factory Area, Plot
No. 34-35 Kanpur. *Telephone:* Office: 2328, Factory:
2093, *Telegrams.* 'MACHINERY.'

Introduction:—The factory was established in 1941 with an authorised capital of five lakhs with the object of manufacturing small tools, valves, screw cutting tools, sugar and textile mill machinery parts, oil mill machinery, agricultural implements etc.

The production started in 1942 immediately after which the Supply Department entrusted them with a very important war work of fabricating Mat Bridge Units requiring high class engineering skill. The experience gained in this stood the factory in good stead in manufacturing Taps and Dies.

The Factory is adequately equipped with Lathes, Grinders, Planners, Shapers, Punching and Shearing, Machine, Drilling Machine, Phenutic Hammers, Heat Treatment Furnace, Gas and Electric Welding Plants, Ferrous and Non-Ferrous Moulding Furnace etc.

Manufactures:—At present the Company is regularly manufacturing the under-mentioned articles:—

- (1) Dies & Taps.
- (2) Lathe Chucks.
- (3) Bench Vices.
- (4) Pipe Vices.
- (5) Pipe Wrenches.
- (6) Adjustable Spanners.
- (7) Ratchet Braces.
- (8) C. I. Sluice Valves.
- (9) Ring Oiling Pedestals.
- (10) Shaft Couplings.
- (11) Split Pulleys.

(12) Lubricators.

(13) Oil Ghannis.

(14) Cane Crushers

Besides the above the Company undertakes jobs for Cast Iron & Gun Metal Casting, Forging Welding, and Structural Jobs.

Future Outlook:—The firm has about 100 workers in its employ. It is being gradually expanded, by adding latest and modern machine tools. To-day their factory ranks as one of the foremost manufacturing engineering concerns of the United Provinces. Some of their products have all India demand right upto Madras, but owing to raw material and transport difficulties, they are handicapped in expanding their activities. Their range of manufacture is being gradually expanded, and within a couple of years they hope to be able to feed country's substantial needs more effectively.

F. N. Dutt & Co., Ltd.

Managing Director. Mr P. C Dutt *Office & Works:* 3A, Raja Kali Kissen Lane, Calcutta. *Telephones* B.B. 1758.

Introduction:—Messrs P. N. Dutt & Co., Ltd. are the pioneers in the Machine Tool Industry. The late Mr. P. N. Dutt, the founder of the concern started a small factory for the purpose in 1931. His achievement in the die making of the most intricate type soon put him foremost in the rank of the machine tool manufacturers in the country. The firm was converted into a Private Limited Company in 1941.

Manufactures:—It is engaged in manufacturing Sheet-Metal machineries of various descriptions *e.g.*, fly presses, power shearing machine, seaming machine, punching machine etc.; ceramic machines of all types are also being manufactured and are in use throughout India.

The most notable achievement was the manufacture of complete plant for the manufacture of electric fans. Formerly these plants used to be imported from abroad at a very high cost. After years of patient research these were placed in the

market and the high precision and efficiency of the machines were soon appreciated by the electrical fan manufacturers. Throughout the length and breadth of the country "Dutt's" automatic presses and auxiliary machines for manufacturing fans are in use and in great demand. Almost all the principal manufacturers of fans in India have got Dutt's machines operating in their factories.

Recent Development :—With the gradual progress made during the last fourteen years, the demand for machines increased and it was decided to expand the factory. A plot of land was acquired in Belur, Howrah, on the river Hooghly in 1945. Necessary equipment has been imported and installed and the factory is acting in production at its new site.

Practical Engineering Co.

Office & Works: 383-385, Arthur Road, Bombay 11. *Telephone:* 42989. *Telegrams:* PRACTICAL, Bombay.

The Practical Engineering Co. is a partnership concern started about the year 1920. It is manufacturing Oil Mill Machinery and has a Foundry Works.

Approximate capital investment of the company is about Rs. 5,00,000/- and more than a hundred labourers are employed by it.

Pradip Lamp Works.

Proprietors: Messrs. Kallu Babu Lallu Babu, Bankers and Zamindars. *Managing Proprietor & Technical Expert:* Mr. Ravindra Krishna Rohatgi, B.Sc. (Eng.) B.H.U. *General Manager:* Mr. Ram Makund, B.Sc., LL.B. *Factory & Office:* Jay Krishna Street, Opp. Rly. Station, P.O. Begampur, Patna City.

Introduction :—Messrs. Pradip Lamp Works came into existence in 1939 for the manufacture of incandescent electric lamps for which there was a very great demand due to the scarcity conditions created by the war. Fortunately, in 1940

the promoters of the concern succeeded in securing a brand new German plant which had been imported in 1935 by Messrs. Madalassa Glass Works but was lying idle. This together with certain automatic machines imported from America form the bulk of the plant at the present moment. Certain machines which could not be obtained from abroad were made by the Company in Calcutta. About five lakhs of rupees were invested. In the meantime deterioration in the war situation necessitated the shifting of the factory from Calcutta to Patna in 1942. The erection of the building and installation of the equipment took some time and the actual production could not start before 1945. It has its own gas supply arrangement, gas being generated in a gas plant of Company's own make.

The factory also owns a small mechanical workshop for maintenance and repair works. It gets its 6,000 volt electric supply from the Patna Electric Supply Company Ltd., and has got its own transforming gear of 200 K. V. A. placed in a separate building of its own.

Production:—The production capacity of the installed plant is 5,000 lamps a day of 8 hours working, but as there is shortage of raw materials it is working only a few hours a day and producing 500 lamps per day. Gas filled and vacuum lamps upto 75 watts are manufactured at present by up-to-date methods and are tested at every stage of manufacture in its own well-equipped laboratory according to B. S. Specification to ensure correct standardisation. All lamps are correctly marked with voltage and wattage for the convenience of the buying public. Manufacture of lamps of higher wattage upto 200 watts will be soon taken up.

Future Plans:—After a couple of years two more chains of machines will be added to the existing plant to double the production of electric lamps including train lighting and auto-car lamps. Further plans to put up machines for making Thermoflasks, Torch bulbs, Switchboard bulbs, Radio Valves and Florescent lighting tubes etc. are also under consideration.

Considering the acute shortage of glass materials, it has been decided to install an up-to-date type of glass furnace in the

near future so that the factory may be self-contained so far as its requirement of glass materials is concerned. This is the only bulky item which takes a lot of shipping or rail space and is a serious bottleneck in the production of lamps.

The Company is also trying to manufacture other raw materials like brass caps etc. and enquiries have already been sent to the suppliers of plant. A large number of electrification schemes are coming as part of the post-war development programme of the Central and Provincial Governments, which would increase the demand for electric lamps.

Precious Die Works.

Proprietors: Mr. Amichand K. Jhaveri & Mr. S. D. Jhaveri.
Office & Works: Sewree Cross Road, Wadala, Bombay 15.

This is a proprietary firm manufacturing Victoria Axles, Motor-doors, locks, various types of Cushion buttons, Victoria Channels, Press-Tools, Pressure Gauge, Syphors and various types of bends from pipes.

They also undertake job work, both light as well as heavy.

Premier Automobiles Ltd.

Managing Agents: Aero-Auto Ltd., Bombay. *Office:* Construction House, Ballard Estate, Bombay. *Works:* Agra Road, Kurla, Bombay. *Branch Office:* 39, Badri Building, Mcleod Road, Karachi 2. *Telephone:* Office: 21156. Works: 87301. *Telegrams:* PREMOBILES.

Manufactures:—The Company has been formed with the object *inter alia* of manufacturing, buying, selling, importing, assembling, distributing and dealing in motor vehicles and automobiles etc. and is at present assembling motor vehicles being the products of Chrysler Corporation, Detroit, U.S.A. The Company has already taken up the manufacture of some parts such as Shock Absorbers, Muffler Radiators, Cushion Springs, etc. and will gradually take up the manufacture of more and more parts.

Radha Govind Industries Ltd.

Managing Director: Mr. G. D. Bhargava. *Office:* Muttra,
U. P. *Works:* Kosi Kalan, G. I. P. Rly.

This Joint Stock Company was started in 1945 with Mr. G. D. Bhargava as its Chairman.

Oil Expellers, Oil Kolhus, Filter Press, Cake Breakers, Dal and Flour Mills, Sugar Cane Crushers, Chief Cutters, M. S. Pans, M. S. Tanks, Ice Cans, Chaff Cutter Blades etc. are the chief manufactures of the company.

The number of workers under its employ is about 150 and capital investment is Rs. 7,00,000/-.

Radhey Lall Steel Rolling Mills.

Managing Agents: Messrs. Radhey Lall Manni Lall. *Office:* Rajguddi, Hatia, Kanpur. *Works:* Juhi Station, Kanpur.
Telephone: *Office & Works:* 2491. *Telegrams:* METALCO.

Manufactures:—They manufacture Bars, Rods & Hoops etc.

Radio Lamp Works Ltd.

Please see 'The Kaycee Group of Industries'.

Raghu Engineering Works Limited.

Office & Works: 5, Daryaganj, Delhi. *Telephone:* 5717
Delhi, *Telegrams:* RAGHUWORKS.

Introduction:—Messrs. Raghu Engineering Works Limited were started towards the end of 1943 by the late Mr. Bhishan Das Basil, M.I.E. (India), who was a very highly qualified Engineer. He was the retired Superintendent,

Government Telegraph Workshops, Alipore, Calcutta. Mr. Basil combined in himself technical knowledge of engineering trade and business acumen of high order. During his service he founded the India Electric Works Limited (Calcutta), which is the first and one of the most important electric fan manufacturing concerns in the country. It was near about 1937 that Mr. Basil conceived the idea of manufacturing machine tools. He was also the founder of the Jay Engineering Works of Calcutta.

After remaining in Jay Engineering Works for some time, Mr. Basil needed better and wider field for his activities. With this end in view, he went to Delhi and in collaboration with Lala Hans Raj Gupta, one of the industrial magnates in Northern India, established the Raghu Engineering Works towards the end of 1943.

Manufactures:—Messrs. Raghu Engineering Works Limited began manufacture of electric fans and at present are manufacturing ceiling fans only which are of very good quality. Another line of manufacture in which the Company is interested is the manufacture of Hurricane lanterns.

Future Programme:—Messrs. Raghu Engineering Works have in hand schemes for the manufacture of table fans, fans for railway carriages motors, train lighting sets, refrigerators, cooking ranges etc.

Reliable Water Supply Service of India Ltd.

Managing Director: Mr. Vidya Prakash, C.E. *Office & Works:* 25, Newal Kishore Road, Lucknow. *Branch Office:* 10, Canning Street, Calcutta. *Telephone:* *Branch Office:* Cal. 5011, *Telegrams:* RELIABLE, Lucknow, TEJSTRANER, Calcutta.

Introduction:—The Company was started in the year 1925 by L. Tej Ram for the manufacture of strainers for tubewells which he had not been able to obtain satisfactorily from others engaged in the line at that time when he wanted them for a private irrigation scheme of his own. Himself an

engineer, he devised a strainer which after his name is known as 'Tej Strainer'.

Equipment and Production:—At present the Reliable Water Supply Service of India Ltd. has about 56 boring plants and 5 Rock Drilling Power Driven machines working in different parts of the country. They have 24 Strainers manufacturing machines in their workshop which is also equipped with a large number of Turning Machines, Planing Machines, Shaping Machines, Lathes of different sizes, Pipe Rolling Machine etc. The Pipe Rolling Machine rolls sheet iron pipes in 8 ft. lengths. Theirs is the largest Pipe Rolling Plant in Northern India and has been manufactured by themselves. The biggest pipes rolled by them were 34". In addition to the equipment detailed out above, their workshop is also equipped with a 5 ton Cupola for manufacturing iron fittings of every description.

The Company also manufactures 'Tej' Centrifugal Pumps for different capacities and heads which are working in different parts of the country.

About 400 skilled and unskilled workers are employed by them.

The daily production of strainers now ranges between 300 ft. to 400 ft. of different sizes.

Conclusion:—The provinces of Bengal, Bihar, Assam, the U. P., the Punjab and N. W. F., are all covered by the activities of the concern. During the war time, the Company executed orders for operational demands for the D. G. M. P., to the tune of nearly 80,000 ft. length. Almost all the major Government and civil projects are being entrusted to the Company and practically all the Railways in Northern India place their orders for Strainers and sinking of tubewells with them. They are also principal contractors to the Central Subsoil Section of the Government of India.

Renwick and Company Ltd.

Managing Director: Seth Mohanlal L. Shah, Calcutta. *Head Office:* Kushtia B. A. Rly. *Works:* (1) Kushtia, (Dt. Nadia), (2) Lakshmanhati (Dt. Rajshahi).

Introduction:—The Company was first started by Mr. William Renwick, who was an engineer under Messrs. Waston & Co., Indigo Planters and Zemindar (changed to the hands of Midnapore Zemindary Co., Ltd.,) under the partnership business to manufacture sugarcane crushing mills and pans for boiling juice. The factory was first started at Laksmanhati in the district of Rajshahi and the Head Office was transferred to Kushtia with the branch at Lakshmanhati.

•Mr. Renwick with his partner in the early eighties of the nineteenth century, started this business of manufacturing sugarcane crushing mills which he realised, had a great field all over India. Mr. John Fairlie joined Mr. Renwick. Mr. W. B. Renwick, nephew of Mr. Renwick, senior, joined the firm as an assistant in the latter part of the 19th century and became a Director in 1904 when he took the place of his uncle and subsequently he was made the senior Director. The firm was converted into a private limited company confining the shares among five European and one Indian members.

The present Directors of the Company are reputed industrialists and business magnates of the country. After they took up the work of the company in March 1945 from Mr. W. B. Renwick and others, they have been making arrangements for extension of work in the mechanical and other directions.

Manufactures:—The Company mainly manufactures agricultural implements such as sugarcane crushing mills, ploughs, handhoes, centrifugals, *gur* furnaces, power driven cane mills and juice boiling pans etc. During the war it supplied a lot of war orders. It also manufactures textile machinery parts and builds motor launches.

The Company's annual output is over 1,000 sugarcane crushing mills, 2,000 juice boiling pans and about 600 ploughs in various kinds. The building of motor launches has been stopped *for want of teakwood from Burma and import of Diesel Engines from the U. K. The company has got a batch of experienced engincers to take up all sorts of work in the Mechanical Engineering Section and is competent to build launches etc. It gives employment to about 400 persons.

R. Tarruck & Co.

Office: 8, Cornwallis Street, Calcutta. *Works*: 8, Station Road. Lilloah, Howrah. *Telephone*: *Office*: B.B. 3461. *Works*: How. 934. *Telegrams*: IRONCLAD, Calcutta.

The Company manufactures M.S. Round, Squares, Flats Brass Rod and Wire etc. and undertake C. I. Castings.

Saru Smelting & Refining Corporation Ltd.

Managing Agents: Messrs. Seth Jugmandardass Shitaprasad Jain, Meerut. *Head Office*: Sadar Bazar, Meerut. *Works*: (1) Sadar Bazar, Meerut. (2) Hazra Road, Calcutta. *Branch Offices*: (1) 161/1, Harrison Road, Calcutta. (2) Chauri Bazar, Delhi. (3) Mcleod Road, Lahore. (4) Latouch Road, Kanpur. (5) Forbes Buildings, Karachi. *Telephone*: *Head Office*: Meerut 262. *Cal. Office*: B.B. 5308 *Works*: South 1951. *Telegrams*: METAL, Meerut. TAMBAPITAL, Calcutta. SARU METAL, Delhi, Lahore, Kanpur.

Introduction:—Messrs. Seth Jugmandardas Shital Prasad Jain, Managing Proprietors of the firm had a long experience of dealing in the import and export of Non-ferrous Metals and Alloys in India ever since the beginning of this century. They were very much pained to see that they had to export the scrap which again they had to import in the shape of refined alloys. When the War broke out in 1939 Indian industries found themselves in a precarious position in so far as they were unable to get

their requirements from foreign countries and no suitable equivalents were available in India. Seth Shital Prasad Jain with his business acumen lost no time and established what is known as 'Saru Smelting and Refining Corporation' in 1939. The Corporation was converted into a public limited concern in 1946.

Manufactures :—They manufacture :—(1) All grades of Antifriction Bearing Metal suitable for bearings of Motor Cars, Oil Engines of all descriptions, Petrol Engines, Air Compressors, Diesel Engines, Water and Steam turbines, Air Craft Engines, Locomotives, Electric Generators and Dynamos, Rolling Mills, Textile and Saw Mills, Sugar Mills, Jute Mills, Rice Mills, Paper Mills, Flour Mills, Ginning Machines, Crushers, Shaft Bearings, Lifts, Centrifugal Pumps etc., and other bearing metals of any specification as per the order of the customer.

(2) Tin Solder of all compositions and specification suitable for every branch of industry.

(3) Brazing Solder of every description.

(4) Silver Solder of all composition and specification.

(5) Brass Ingots.

(6) Gun Metal Ingots.

(7) Phosphor Bronze.

(8) Admiralty Navy Bronze.

(9) Metal Plastic Ingots.

(10) Bell Metals for any specific purpose.

(11) Aluminium Ingots.

(12) Type Metals.

(13) Chill Cast Solid Round and Square Bars from Brass, Gun Metal and Bronzes.

Besides, they undertake all sorts of smelting and refining job of Non-ferrous Metals.

All their products are carefully analysed in their Laboratory before they are put in the market with the result that "SARU"

Products are to-day well known in the market and have always been in great demand both by the public and the Government.

Future Schemes :—Their aim is to embrace all branches of the non-ferrous industry and as soon as circumstances permit, they hope to install a sheet Rolling Mill also.

Scindia Steam Navigation Co., Ltd.

Managing Agents Messrs Narottam Morarji & Co. *Office* Scindia House, Ballard Estate, Bombay. *Calcutta Office* 33, Netaji Subhas Road, Calcutta. *Works* Gandhigram, Vizagapatam, *Telephone* Bombay Office 30075 (6 lines). *Calcutta Office* Cal. 5840 3 lines) Vizagapatam 119 JALANATH

Introduction :—This enterprising Indian firm laid out a large shipyard at Vizagapatam for the construction of steamers upto 8000 tons deadweight. Most of the machinery required such as punching and angle-sharing machinery, plate-straightening machinery, pneumatic and other machine-tools, cranes etc had been obtained from the U K but further progress was delayed by the war taking a serious turn. Early in 1912, several mine-sweepers and basset trawlers were built at Vizagapatam. Owing to enemy action in April, 1942, their activities in Vizagapatam were suspended and under instructions from Government they had to remove their machinery to Bombay where a new shipyard was fitted up for shipbuilding and repair. Towards the end of 1942, however, work was re-started at Vizagapatam and a ship-yard was laid out with necessary facilities for ship-repair and construction work with machinery brought from Bombay.

Activities :—The Scindia Steam Navigation Co. Ltd. are the biggest Swadeshi Concern in the line. Their activities which were till recently restricted to coastal trade have undergone considerable expansion since the organisation of their two new lines India/America and India/U K. They have now opened a cargo and passenger service also between U. K. and India. For the first time in the Indian Shipping Industry their new ship "Jai Azad" sailed from Bombay on the 6th of August, 1948, for London carrying a full complement of passengers.

The Scindia Company are also running the Haj service from Calcutta, Bombay and Karachi to Jedda and have built two new steamers specially for that purpose. They are also the Managing Agents of the Ratnagar Steam Navigation Co. Ltd. whose vessel plies between Bombay and Panjim on the Konkan Line. They have Branch Offices and Agencies at all the principal ports of India, Burma and Ceylon.

Sewri Engineering Works.

Office & Works: 234, Sewri Road, Bombay No. 15. *Telephone:* 43709. *Telegrams:* SEWORKS.

This is a proprietary concern undertaking General Engineering and Light Structural work.

The firm employs about 100 labourers and has a capital investment of Rs. 1,50,000/-.

Shaparia Dock & Steel Co., Ltd.

Managing Director: Mr. M. B. Shaparia. *Office:* Sewree Fort Road, Bombay. *Works:* (a) Parcel Road, Byculla Goods Depot, Bombay 12. (ii) Sewree Fort Road, Bombay. *Telephone:* 61275 and 60897, *Telegrams:* SHAPARIA.

Introduction:—This Company has emerged in its present form as a result of amalgamation of Messrs Shaparia Iron & Steel Works Ltd., with Messrs. Shaparia Dock & Engineering Co. This new Company is carrying on the work previously carried on by Messrs. Shaparia Iron & Steel Works Ltd., at the Byculla workshop. The Workshop previously belonging to Messrs. Shaparia Dock & Engineering Co. has now been taken over by this firm and greatly expanded for the manufacture of ships, life-boats etc.

The Byculla workshop was started by Mr. B. P. Shaparia in 1902. It was a modest beginning then. The work undertaken consisted for the most part of constructional nature on a very limited scale. The first big job undertaken by the founders was for the manufacture of corrugated steel pale fencing for the

Bombay Municipality. The enterprise had to face many difficulties in the beginning but the confidence and energy with which the promoters pushed on with the scheme gave them complete success.

Later Developments:—During the 1914 war, the Company offered its services to the Government and undertook the manufacture and supply of war stores to the Government. In 1924 the Company expanded its business with the result that it was converted into a limited company. The first big work undertaken by this new institution was the manufacture and erection of large storage tanks each with a capacity of one million gallons. In addition to this the manufacture of paint making machinery was undertaken. The Company also undertook structural work of major importance in the city of Bombay.

In 1935, in order to cope with the increased activities of the Company the premises were extended and suitable plants for manufacturing ambulance, copperload boats, fire fighters, pressed steel-load boats, road watering trucks, hydraulic tippings as well as 3-way pressed steel boats and pleasure boats for power and manual operation were installed.

In the year 1939, the scope of the business was further widened and the Company opened a department for the manufacture of steel rolling shutters, steel windows, and doors etc. These were fitted to numerous buildings in and around Bombay, and up-country towns, where they are still giving very satisfactory service. One Service Department of the Company looks after the up-keep and repair work throughout the city of Bombay.

Owing to the declaration of the war and the heavy demand of the Government, the Company had to expand its factory still further to two and a half times its pre-war capacity.

Present Position:—Many important works undertaken by the firm have become known for their durability. In addition to all types of Iron and steel construction works, the Company produces several specialities of which the most notable is the Shaparia pressed steel boat, an unsinkable craft designed for use with oars or detachable outboard motor. Constructed entirely of pressed steel plates, this boat is leak-proof, rust proof and

cannot warp. A portable fire-proof garage with floating doors entirely climate-proof and embodying many unique features, is also manufactured by the Company.

The Sewree Workshop was started during the period of the war for the manufacture of medium size sea-going vessels and life-boats, puntoons, trawlers etc. This workshop has now been greatly expanded and the new Company of Messrs. Shaparia Dock & Steel Co., Ltd., is launching upon schemes of further expansion.

Shivaji Works Ltd.

Managing Agents: Messrs. Kirloskar & Co. *Office & Works:*
P.O. Tikekarwadi, Dist. Sholapur.

This public limited concern was started in 1900. The factory is situated in an extensive area of one acre.

They are producing Vices, Bearings, and Cane Crushers. C. I. Castings is also undertaken by them.

Shree Hanuman Steel Rolling Mills Co., Ltd.

Managing Director: Mr. K. D. Jalan. *Office:* 8, Dalhousie Square, Calcutta. *Works:* Ghosury, Howrah. *Telephone:*
Office: Cal. 4492, *Works Howrah* 45. *Telegrams:*
SOORATRADE.

Introduction:—The idea of establishing this Company was mooted out by the promoters of the firm when the recommendations of the Tariff Board were published and setting up of re-rolling industry in India, hitherto unknown in the country, was envisaged. It was, however, sometime before the scheme could be finalised with the result that when the firm came into being one or two such firms were already established in Calcutta.

Activities:—They are engaged in rolling from scrap and billets, imported and indigenous. At present they manufacture rounds of all sizes from $\frac{1}{2}$ " to $\frac{1}{8}$ ", flats upto $\frac{3}{8}$ " thick, rails, rods, and bars. Their plan is to undertake manufacture of the unusual varieties also in due course. They have also manufactured Baling Hoops of the best quality which were very much appreciated by the customers.

Shree Jam Wire Products Co., Ltd.

Managing Agents. Messrs. Gor & Co., Ltd., Jamnagar.
Office Mherwan Building Sir P. M. Road, Bombay.
Works Jamnagar. Telephone: 20529, 21554. *Telegrams:*
NANDVADAN, Jamnagar, JAMWIRE, Bombay.

This Company was started in 1942 with a paid up capital of Rs. 17,00,000 and is engaged in the manufacture of Wood Screws, Office Pins, Gem Clips, Rivets and other wire products.

Shree Krishna Ltd.

Office 192, Cross Street, Calcutta. *Works.* (1) 1/1, Kishandayal Jalan Road, Salkia Howrah. (2) 39, Grand Trunk Road, Lillooah, Howrah (3) Delhi Sahadara.

Messrs Shree Krishna Ltd is a private limited company. It was established in 1940. All types of sheet metal works, viz. galv. Buckets, Bath Tubs; Bolts Nuts, Wire Nails, Washer, Machine Tools, C I. Pans, Coin Moulds (For H.M.G.'s Mint) etc. are manufactured by them.

The number of labourers in the company is about 150.

Shree Laxmi Iron and Steel Works Ltd.

Managing Agents: Messrs. Rungta Sons Ltd. *Office* P-16, Kalakar Street, Calcutta. *Works:* 12/13, Chakpara Road, Lillooah. *Telephone:* Office B.B. 6627. *Telegrams.* SWAGAT, Calcutta.

The Company is at present engaged in Steel Re-Rolling, and is producing Steel Furnitures etc. They have got plans under way to produce various Machines also such as Lathes, Shaping and Planning machines etc.

Singh Engineering Works Ltd.

Managing Director. Sardar Indra Singh, M.E., F.R.S.C. (Lond.) *Office & Works.* Grand Trunk Road, Kanpur. *Telephone:* 2951, *Telegrams:* SINGH.

Introduction :—The firm of Messrs. Singh Engineering Works was started in the year 1920 by Sardar Indra Singh who is considered to be the founder of steel re-rolling industry in India. Starting with a small workshop they rolled their first steel from unserviceable rails in 1927. In 1938 a large factory was acquired and the Singh Engineering works came in the front line of steel rollers in India. It was at this time that they started manufacturing railway truck materials for the Government of India.

The firm was changed into a Private Limited Company in the year 1941.

The works at present comprise of:—

- (1) Rolling Mills (2) Machine Making plants and (3) An up-to-date foundry.

Manufactures :—The Singh Engineering Works Ltd., manufacture mild steel, B. S. S. rounds and squares and flat bars from 5/16" diameter to 3", Railway Truck Materials, Tie Bars, Cotters, Two-way Keys, Straightening Bars, Crow Bars; Gibs, Chisels, etc. etc.

They undertake cast iron and steel casting of all kinds, manufacture municipal watering and sanitary carts, boats, ornamental gates and railings $\frac{1}{8}$ " thick and structural works, tanks, etc.

The machinery manufactured by them are old metal stoves, jewellers rolling materials, agricultural machinery and sugar mill machinery *vis.*, cane crushers, crystallisers, sugar centrifugal, filter presses, driers, lime juice tanks, bag-fillers, *gut* melting pans etc.

They also manufacture door borings, and chimney ovens, tent pins, joints, and pegs, and all materials of the engineering and hardware required by the military units etc.

Shree Gopal Iron Works.

Proprietor : Rai Bahadur Ramani Mohan Sinha. **Office :** 38A, Kalighat Road, Calcutta. **Works :** 7 & 8, Goho Road, Howrah.

This is a proprietary firm which was started in 1939. They undertake all kinds of structural and mechanical fabrication, and castings of all description. They manufacture door fittings and Agricultural Implements. It has a capital investment of about Rs. 1,50,000. There are about 100 workers under its employ.

Star Iron Works.

Proprietor: Mr. Prithwipati Singha. *Manager:* Mr. J. N. Sinha. *Office & Works:* Lillooah, Howrah, *Telephone:* Howrah 289, *Telegrams:* PRITHWIPAT, Lillooah.

Introduction:—The Star Iron Works was established in the year 1916 as a small iron foundry mainly for the manufacture of cast iron cooking pans which were till then being entirely imported from abroad.

Later Developments:—Later when their activities expanded further plots of land were purchased and extensions carried out. A small Machine and Fitting shop was also added to the works. Gradually it has developed into a self-contained factory containing—

- (1) *A Perfect Foundry*—Ferrous and Non-ferrous suitable for general Engineering purposes, both Light and Heavy, Simple and Complex, as a Feeder, and
- (2) *A Standard Engineering Workshop*—comprising a Machine and Fitting shop, a Smithshop as the second Feeder and an Electroplating shop as a final Finisher.

The existing patented process of the Foundry introduced by the founder Mr. Satish Chandra Singha, the 'Foundry Lion' was also improved and a second 'Grant of Patent' for the same was obtained.

Present Position:—The factory at present consists of the following 14 departments all of which are very well equipped:—

1. General Office.
2. Engineering Section including Drawings.

3. Stores Godown and Stockyards.
4. Power House, both Steam and Electric.
5. Foundry (Ferrous and Non-ferrous) including a Patternshop divided into:—
 - (i) General Casting—Light & Heavy.
 - (ii) Fishnet Weights etc.
 - (iii) C. I. Pan Section.
6. Smithshop.
7. Light Structural and Sheet Metal Works.
8. Welding Shop (Gas and Electric).
9. Machine Shop.
10. Fitting Shop.
- 11. Electroplating Shop.
12. Weighing Machine Department.
13. Painting & Packing Section.
14. Maintenance and Repairs Section.

The Factory employs a total of about 700 male and female workers.

Manufactures :—The Factory is registered in the list of Indian Stores Department, for supplying different types of light and heavy castings, forgings, machine-finished, fitted-up and electroplated parts. They manufacture Weighing Machines, Weighbridges, Small Tools etc.

All their products are branded with "Star".

Activities :—The firm has all along been a regular supplier to the Calcutta Improvement Trust for different types of castings, cast iron pipes, and specials to B.S.S. They have rendered some very useful and significant services to a number of engineering and chemical firms, contractors and builders in the supply of various types of castings, C. I. sanitary fittings, tanks and containers etc.

Star Metal Refinery.

Sole Proprietor: Mr. Chimanlal Dahyabhai Patikh. **Office:** 36f, Hornby Road, 4th Floor, Fort, Bombay. **Works:** Vikhroli, G. I. P., Bombay Suburban. **Telephone:** Office: 30247. Works: 87327. **Telegrams:** STARMETAL.

Introduction:—The Star Metal Refinery was started in the year 1940 for the manufacture of Antimony from Antimony Ore (Stibnite). The plant and the furnaces were erected in 1940. They are the first in India to produce Antimony in finished state from indigenous sources although at a slightly high cost.

Present Position:—The capacity of the present plant is three to four hundred tons of Antimony per year which is about the total consumption in India. For the last few months since partition they have been experiencing considerable difficulty in supplies of ore from their own mines. They have, therefore, arranged for getting the supplies of ore from far away countries like South America and South East Asia etc. and are keeping the factory going.

They hope that very soon they will be in a position to supply the entire demand for this material in the country which is about 800 to 1000 tons.

By-products like Antimony Oxide, Antimony Sulphide, Golden Sulphate of Antimony and some antimonial salts are directions in which further development is under active consideration of the management. Very recently they have successfully experimented with the production of pure Antimony Oxide but it will be still some time before the production of the same can be undertaken on commercial scale for they have yet not gone beyond the primitive stage.

Developments:—They have recently put up a new kind of furnace known as 'Shaft Furnace' which is expected to work very efficiently and bring down the cost of extraction considerably. The distance of the mine in N. W. F. P. from the factory in Bombay has meant considerable mining and transportation cost to the industry. The management have, therefore, in mind a

scheme to develop hydro-electric power at the mines and to work the mines mechanically and bring down the ore by aerial ropeways. They have also a plan to concentrate the ore at the mines and bring it to Bombay to minimise the transport cost. A good thorough road link between the mines and the railhead will further bring down cost of production.

Conclusion:—India has been exporting away her valuable ores only to get back finished metals at a very high cost. This Refinery is an attempt to prevent this state of things. Now that the industry has been granted protection this important unit of the non-ferrous industry is sure to stabilise itself.

Steel Equipment & Construction Ltd.

Managing Director: Mr. D. C. Dhiman. *Office & Works:* 22, Grand Trunk Road (North), P.O. Lillooah, Dist. Howrah.
Telephone: Howrah 399. *Telegrams:* STEELQUIP.

Introduction:—The Company was started in the year 1929 with a small capital of Rs. 12,500/- for the manufacture of steel furniture of all varieties.

Later Development:—In 1935 they took up the structural, mechanical, welding, and galvanising work and executed many important contracts.

In 1938 they planned the manufacture of cutlery also but owing to the outbreak of the war they closed down this department and in its place started a re-rolling mill to re-roll iron rounds, plates and angles etc.

During the war, the Company was mainly engaged in the manufacture of war materials such as T. G Shed, Nissen Twin Shed, Angles, Pickets, P. & T. Tubes, parts of Armoured Vehicles, Bath Ovals etc.

In 1941, the Company got assistance from Government in acquiring about 11 bighas of land at 22, G. T. Road, Lillooah, and shifted the factory to the present site.

Future Plans:—The Directors of the Company have recently converted the company into a Public Limited Company. They are thinking of importing up-to-date machinery from England and America with a view to manufacturing various kinds of materials for the civil market. The following are some of the items which the management have under consideration for the post-war period:—

1. Structural work of public buildings.
2. Railway Jobs.
3. Chaff-cutter blades, knives, etc.
4. Locks, Hinges, Staples, and other iron and brass materials for building purposes.

Steel Products Ltd.

Managing Agents: Messrs. D. Khaitan & Sons, Ltd. *Office:* 9, Netaji Subhas Road, Calcutta. *Works:* 96, Garden Reach Road, Kidderpore, Calcutta. *Telephone:* Office: Cal. 577. Works: South 2470. *Telegrams:* ADEQUATE.

Introduction:—Started in 1914 by an American firm it was acquired by the late Babu D. Khaitan who held highest number of shares in the company in 1938. Since then it has been under the management of Messrs. D. Khaitan & Sons Ltd.

The war of 1939 afforded them a great opportunity to expand their activity when they manufactured various components for armoured fighting vehicles. The number of workmen rose from 100 to 700.

Manufactures:—The Steel Products Ltd., manufacture *inter alia* the following:—

Steel Furniture and Office Equipment, Steel Racks, Cabinets, Steel Doors and Windows, Steel Chimneys, Steel Tanks pressed and rivetted, bolted or welded, Steel Staging, Steel Structure of all kinds, Sugar Mill Machinery, Cane Carriers, Centrifugal Dryers and Tanks, Jute Mill Machinery, Tea Cutters, Tea Sorters, Tea Packers, Tea Dryers.

For the future they have a very ambitious programme of mechanical and structural engineering as well as of several new lines of manufacture.

Structural Engineering Works Ltd.

Managing Director: Mr. N. B. Bhagat. *Managing Agents:* Messrs. Bhagat & Sons Ltd., *Office:* Prospect Chambers (2nd Floor), Hornby Road, Fort, Bombay. *Workshop:* Sewri Fort Road, Bombay 15. *Telephone:* Office: 30167. Works: 60445. *Telegrams:* STRUCTURAL.

Introduction:—The firm was established in 1921, as a proprietary concern by Mr. N. B. Bhagat, under the name and style of Messrs. Bhagat & Sons. Expanding with rapid strides by addition of up-to-date Machinery and equipment, by the sole and tireless effort of Mr. Bhagat, it finally emerged as the Structural Engineering Works Ltd., in the year 1943.

The present company is under the Managing Agency of Messrs. Bhagat & Sons Ltd., with Mr. N. B. Bhagat as the Managing Director. The Board of Directors include: Sir H. P. Modi, K.B.E., as Chairman and A.D. Shroff, Esqr., both of whom are associated with the House of Tatas.

At its present premises at Sewree, it owns a large Engineering Workshop, possessing most up-to-date machinery and equipment both on the Structural and Mechanical side.

Activity:—The firm is specially equipped in staff and machinery in undertaking design, fabrication and erection of steel frame buildings, bridges, towers, tanks, chimneys pipe lines, mast etc. In addition to the orthodox rivetted and bolted design and construction, the firm has carried out several very large projects adopting rigid frame principle of design of welded construction believed to be first of their kind in India. Steel frame work in Bombay for East India Cotton Association Building, Brabourne Cricket Stadium, Times of India Building, Bus Garage and Workshop of the Bombay Electric Supply & Tramways Co. Ltd., Tata Chemicals Buildings at Mithapur

(2,000 tons) Hindustan Motors Factory at Uttarpara (Calcutta)
(1,500 Tons) Soap Factory for Messrs. Tata Oil Mills Co. Ltd.,
at Tatapuram (1,000 Tons) are but a few of the major steel
construction carried out by the firm in the past.

Particular reference may be made of the Hindustan Motors
Factory and B.E.S.T. Bus Garage, where on the firm's initiative
welded design and construction were adopted replacing orthodox
rivetted and bolted design specified, showing better type of
structure, economy in steel and cost that could be effected in
rigid frame welded design.

In addition to the Structural work, the firm is equipped in
manufacturing and supplying welded boiling Kiers, Soap and Oil
and Vegetable ghee plants, sugar factory vessels etc. It has got
a mobile workshop, equipped with most up-to-date machinery
and skilled staff to carry out fabrication and erection of steel-
work of any magnitude at site.

Conclusion:—With their skilled and highly qualified
technical staff, up-to-date machinery and equipment the Com-
pany is capable of undertaking any type of construction even
involving special features in design and construction.

Swadeshi Industries Ltd.

Managing Agents: Messrs. Anandram Gajadhar. *Office* 33,
Netaji Subhas Road, Calcutta. *Works:* P.O. Panihat,
24, Parganas, West Bengal. *Show-Room:* 158, Cross
Street, Calcutta. *Telephone.* Office: Cal. 2061 and 2469.
Works: Barrackpore 31. *Telegrams:* JAIPURIA, Calcutta.

The Swadeshi Industries Ltd. are manufacturers of
Bakelite Electrical Accessories 221 India which include switches,
Fuse Cut-Outs, Joint Cut-Outs, Plugs, Plug Sockets, Tumbler
Switches (plain), Tumbler Switches (with fuses), Junction Boxes,
Lamp Holders (Pendent), Ceiling Roses etc.

They are desirous to expand their business. Tools for
moulding are on order and compression or presses Injection are
under negotiation.

Tata Iron & Steel Co., Ltd.

Managing Agents Messrs Tata Sons Ltd. *Head Office* Bombay House, Bruce Street, Fort, Bombay *Agents' Office* 23-B, Netaji Subhas Road, Calcutta. *Works* Jamshedpur. *Telephone*. Head Office 26041, *Agents' Office* IRONCO, Bombay. *Agents' Office* TATAIRON, Calcutta. *Works* IRONCO, Jamshedpur

Introduction :—With the advent of the present century there opened a new chapter in the industrial history of India in as much as Iron and Steel Industry in the modern sense of the term made its first appearance on the Indian scene and a new chapter was opened in the industrial annals of India by the late Mr. Jamshedji Tata, Visionary, and yet a Realist, whose name towers above any other name in Indian Industrial History, and whose career reads like a romance of industry.

The pioneering efforts, the early failure and the ultimate triumph of the House of Tata is a familiar tale. Jamshedji died on the 19th May, 1904, after preparing the ground and sowing the seeds which later blossomed into the Tata Iron & Steel Co., which was formed in 1907 and commenced the actual construction of the work in 1908 in a jungle between the Suvrenarekha and the Khorakai rivers in the District of Chhota Nagpur in Bihar. Tata Iron and Steel Works are situated at Jamshedpur which was originally known as Sakchi. The first pig iron was produced in 1911 and the first steel in 1912.

The Company has its own Ore Mines at Noamundi in Bihar and at Gorumahisani, Badampahar and Suhapat in the State of Mayurbhanj in Orissa, at distances ranging between 40 and 80 miles from Jamshedpur, and its Collieries some 105 to 110 miles away. The other raw materials required for making Iron & Steel, like fluxes and refractories are also available within easy distance.

The First World War (1914-18) :—The original plant consisted of two Blast Furnaces and a Steel Plant with rolling mills and had an annual productive capacity of 120,000 tons of pig iron and roughly 80,000 tons of rolled steel.

In August, 1914, the war broke out. In order to feed the Allied War Machines, it became essential to mobilise the entire resources of the Empire. The most pressing demand was for steel, a metal ever supreme in the front line of defence. To Tata Works came an opportunity to strengthen the production front of the Allies. In spite of its infancy it supplied about 300,000 Tons of steel rails etc. to Government at a concessional price which helped the war effort to a great extent. In recognition of this service, to honour the founder Jamshedji Tata, Lord Chelmsford renamed the place, Jamshedpur and the nearest railway station, Tatanagar.

Period of Trial and Fiscal Protection.—On the 11th November, 1918, came the victorious end of the war for the Allies. The world returned to normal ways of living. The war had given a great fillip to India's industries in general. But the period of prosperity did not last long. The process of transition from war to peacetime conditions involved considerable suffering. An economic slump with its essential concomitants, unemployment, poverty, and misery soon swept over the whole world. The Indian steel industry with its reserves almost completely depleted during the war, found itself on the edge of a precipice with its roots exposed to the blizzard of war competition. In accordance with the recommendations of the Fiscal Commission, the Government granted protection to the Steel Industry in 1924, partly by import duties which were first reduced in 1927 and again in 1934, and partly by granting subsidies which were removed in less than three years of their grant. Protective Duties were due to expire on 31st March 1941 but the Government decided to continue the same for reasons of war.

The protection referred to above was not a burden on the consumers. In the case of Iron & Steel, the additional revenues accrued to Government from Protective duties on rolled steel, excluding Government Stores, amounted to Rs. 10.35 crores during the period 1924-25 to 1937-38, whilst the value of protection to the Steel Company over the same period came to Rs. 8.89 crores. The figures speak for themselves.

The first years of protection were years of difficulty for the steel industry. Dumping accentuated by the depreciation of the

Continental exchanges, the disastrous labour strike of 1928 at the Works of the Company, fall in the steel prices, a progressive drop in the orders for rails and the acute economic slump that followed the Wall Street crash in 1929, created a precarious situation.

The Era of Expansive Prosperity:—The grant of further protection in 1934 coincided with a new era of prosperity. Seizing the opportunity, the Steel Company went ahead and spent during the period of seven years a sum of Rs. 8.½ crores on its development programme including the erection of New Control and Research Laboratories equipped with the latest appliances for process control and research. Production grew from year to year reaching record figures in 1941-42. Further extensions were contemplated, some of which were completed inspite of the out-break of the war in 1939. A new thousand-ton Blast-furnace replaced one of the old furnaces in 1939-40. A plant for the production of Railway Wheels, Tyres and Axles, so vital to the scheme of the Railway Board for the large-scale manufacture of locomotive engines in India and to the self sufficiency of the country in the supply of rolling stock was installed and brought into operation in November, 1941. An additional steel-making plant and a 50-ton Acid Open-Hearth Furnace were put into operation in June, 1942, increasing the ordinary steel-making capacity of the plant and turning out acid steel from Indian materials for locomotive forgings, acid boiler plates, railway rolling stocks etc. A new Benzol, Toluol Plant was installed and brought into operation on behalf of the Government in May, 1941. A half-ton High-frequency Furnace for the manufacture of special alloy steel was put into operation in September, 1943. A pilot ferro alloy plant with four electric arc furnaces for the production of ferro-tungsten was installed in April, 1943. A Vanadium extraction plant is in progress. The Steel Company also proposes to set up an entirely separate department for the manufacture of alloy and tool steels in the near future.

The Steel Company had also formulated before the outbreak of the war proposals for the installation of a Billet Mill to roll Billet suitable for several types of small and medium forgings; a

hoop and strip mill, and a tube mill in co-operation with Messrs. Steward & Lloyds. As priority had to be given to other extensions of more immediate importance from the point of war, these plans have had to be held in abeyance.

The Second World War (1939):—The Second Great World War demanded more and more steel. The foresight displayed by the Steel Company in building its new Control and Research Laboratories in 1937, placed it in a position in which it could render immediate assistance to Government. In September, 1937 Tatas offered to place for the duration of the War their entire resources at the disposal of the Government.

As the war wore on, possessing the necessary experienced personnel, equipment and research organisation, Tatas embarked on an elaborate research programme which enabled them to manufacture and supply in addition to large quantities of structural products and carbon steel, a wide range of special and alloy steels as well, for the fabrication of the armoured vehicles, for armour-piercing and high explosive shells, for gun carriage mountings, for ship-building, for service helmets, for parachute harness equipment, for machine tools, mint dies and surgical instruments and for a variety of other requirements. The ability of Messrs. Tata Iron & Steel Co., Ltd., to manufacture special alloy and tool steel was not only of great importance to the allied war effort, but is, without any doubt, playing an important part in the post-war industrial development of India. A number of essential industries—from aircraft, automobiles, locomotive and machinery production down to cutlery, engineering and hardware manufacture—depend for their maintenance and growth on a continuous supply of tool and alloy steels. It is hoped that by assuring them of such supplies, the Company will be able to carry the country many stages forward in the direction of self-sufficiency.

The Tata Iron & Steel Works undertake all operations from the production of pig iron to the manufacture of finished steel, producing pig iron, steel ingots, rails, fishplates, steel sleepers, structural sections, bars, plates, sheets, steel wheels, tyres, and axles for railways, and agricultural tools. By-products are coal-tar, sulphate of ammonia, zinc dross, flux skimmings, red

oxide, and ferrous sulphate. Associated Companies which are located round about the Tata Steel Works produce tin-plates, rods, wire, wire-nails, bolts and nuts, electric cables, steel-mill rolls, castings etc. The pre-war production of pig iron and saleable steel amounted to about 1 million tons and 700,000 tons per annum respectively. With the schemes of extension contemplated by the Company the production of finished steel is expected to go up to about 950,000 tons per annum.

The Company also administers the town of Jamshedpur. The administration of the town, with all the comforts and amenities affords for the work people, costs the Company half a crore per year. Where a few years ago a little jungle village named Sakchi was situated, to-day there stands the city of Jamshedpur with a population of 1,50,000 built up around the Tata Iron & Steel Works.

Conclusion :—Tatas aim at both industrial and humanitarian ends. They have set up an industry which may be regarded as the keystone of the industrial arch. Appreciative of human values they are endeavouring their utmost for the promotion of labour welfare. Starting with modest beginnings, they have grown to be the largest single steel-producing unit in the British Empire and served, in the war, as the largest single arsenal east of Suez. Their role in post-war development of India will, doubtless, be of great significance, for steel which helped to win the war, will help no less to build the peace.

Tata Locomotive & Engineering Co., Ltd.

Managing Agents: Messrs. Tata Industries Ltd. *Office:* Bombay House, 24, Bruce Street, Fort, Bombay. *Works:* P.O. Telco Works, Dist. Singhbhum. *Telephone:* Works: 612. *Telegrams:* Works: TATALOCO, P.O. Telco Works.

Messrs. Tata Locomotive & Engineering Co., Ltd. were started in 1945 primarily for the manufacture of locomotive Boilers and locomotives under contract with the Government of India. The Company proposes in course of time to undertake

heavy engineering works and manufacture of machinery including road rollers, under-frames and automobile components etc.

Authorised capital of the Company is Rs. 700,00,000 of which called up and paid up capital is Rs. 200,00,000. The total number of workers under its employ is about 1,600.

Tatanagar Foundry Co., Ltd.

Office: Stephen House, 4, Dalhousie Square, East, Calcutta.

Works: (1) Tatanagar, B. N. R. (2) Belur, E. I. R., Dist. Howrah.

The Tatanagar Foundry Co., Ltd. started business in 1927 when a factory was established at Tatanagar. Later, on account of expansion of their activities they founded another factory at Belur in 1940.

Cast Iron Sleeper Plate for the Indian Railways, C. I. Pipes and specials, are manufactured by the Company. They also undertake general castings. About 3000 workers are employed by the Foundry.

The Tatanagar Foundry Co., Ltd. have a capital investment of about Rs. 15,00,000.

Textile Machinery Corporation Ltd.

Managing Agents: Messrs. Birla Brothers Ltd., *Office:* 8, Royal Exchange Place, Calcutta. *Works:* P.O. Belghurriah, Dist. 24 Parganas. *Branch Offices:* (1) Imperial Bank Building, Bank Street, Fort, Bombay. (2) C/o. Messrs. Birla Cotton Spg. & Wvg. Mills Ltd., P.O. Birla Lines, Subzimandi, Delhi. (3) 10/89, Sambandam Mudaliar Road, R. S. Puram Post, Coimbatore. (4) Opp. Sherkotda Police Choki, 2nd Floor, Reid Road, Ahmedabad. *Telephone:* Office: Cal. 562. *Works:* B. B. 4061—6063. *Telegrams:* Office: TEXMACO, Calcutta, Works TEXMACO, Kamarhati,

Introduction:—The Textile Machinery Corporation Ltd., was incorporated on the 4th August, 1939, with a paid-up capital of Rs. 25,00,000 to manufacture cotton textile machinery and parts. It began operation in 1941 with an initial programme of producing 250 spinning frames and 2,000 looms annually which was, however, upset by war.

It has two factories: one at Gwalior and the other at Belghuriah (Bengal); the former is now working on textile machinery while the latter was diverted during the war to produce war material. The value of the plant and machinery at the end of 1942 was about Rs. 18,50,000. The Calcutta factory has now been geared on to the production of textile machinery.

Present Position:—The capacity of the Textile Machinery Corporation which is one of the pioneers in the line and can be considered as representative of the industry in the country, is about 2,000 looms and 100,000 spindles per year. This capacity could be increased many times over, if precision machine tools along with other equipments are made available.

Their Gwalior branch working with the only a small part of their original machinery imported for the purpose is engaged on a programme of manufacturing 1000 looms per year.

Future Plans:—At present the manufacture of textile machinery by the Corporation includes Ringframes, spindles, Conversion material and other spare parts. But they have a plan to start manufacture of Inter, Slubbing, Drawing, Cards and Blow Room, i.e., complete spinning plant. Besides, production of heavy machinery like Boilers, Sugar Mill and Paper Mill Machinery will also be undertaken by them.

Conclusion:—One of the long felt difficulties of the textile industry, cotton, jute, silk and woollen is that it has to depend on foreign countries for the fabrication of textile machinery and parts with the result that in times of crisis like war its efficient working and expansion are seriously hindered. The establishment of the Textile Machinery Corporation, therefore, fills an important gap in the industrial economy of the country.

Thakurdass Sureka.

Proprietor: Mr. Thakurdass Sureka. *Office & Works:* 172, Jogendra Nath Mukerjee Road, Salkia, Howrah.

Messrs. Thakurdass Sureka is a proprietary firm established in 1913 with a capital investment of Rs. 10,00,000. They manufacture C. I. Pans, rain water pipes & fittings, drainage fittings, cisterns, Municipal requirement, manholes, and Machinery parts.

The firm has about 200 labourers under its employ.

1937

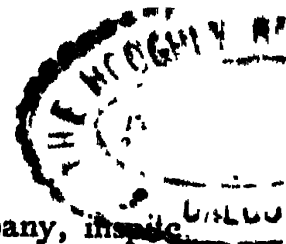
Tin Printing & Metal Works Ltd.

Managing Agents: Messrs. Agarwal Bros., Ltd. *Office & Works:* Grand Trunk Road, Subzimandi, Delhi. *Telephone:* 5645. *Telegrams:* TIN.

Introduction:—Tin Printing & Metal Works Ltd., Delhi, was incorporated as a public limited company in the year 1934 with the principal object of manufacturing printed and decorated tin containers of all descriptions and sheet metal goods.

The working of the Company started in 1937 as it took a long time to import suitable plant and machinery.

Manufactures:—Soon after starting the work and before the Company could be established on proper lines, the World War Second broke out in 1939 and the Company had to switch off its energies to meet the needs of the Defence Department. During war the Company enlarged its workshop to produce mechanical parts, hand tools and other engineering store required for its own consumption as well as to meet the requirements of the Defence Services. Tin Containers, Patches Folding Boat, Hollow-ware, Cooking Utensils, Receptacles, Buckets, Tubs, Kettles, Hot Water Appliances, Steel Trunks, Suit Cases and many other articles made of light metal sheet and cast material were produced and supplied in bulk for use by the army during the war and are now available for civil consumption.



Present Position :—During the war the Company, in spite of various handicaps, made additions to the building, plant and machinery. It now consists of Ferrous and Non-Ferrous Metal Foundry, Galvanising, Tinning, Electro-Plating, Tin Printing, Lacquering by Photo Litho Process, Acetaline Welding, Manufacturing of Electrical Appliances and Precision Tools and Agricultural Machinery.

United Iron & Steel Corporation Ltd.

Managing Director: Mr. K. N. Dalal. *Office:* 9, Clive Row, Calcutta. *Works:* 8/6, Tara Chand Ganguli Street, Belur, Howrah. *Telegrams:* BUYERS.

Manufactures :—They manufacture Tanks, Drums, Cisterns and Cylinders. They also take interest in trunking for Ducts and Steel Metal Works, plain or galvanised.

Universal Screw Factory.

Proprietor: Seth Dharmavir Virmani. *Office & Works:* Chheharta, (E. P. R.), Amritsar. *Telephone:* 482, Amritsar. *Telegrams:* UNISCREWFY.

The Universal Screw Factory came into existence as an individual proprietary concern in 1941 with a capital of Rs. 300,000 owned entirely by Indians. The first set of machinery were imported from Hongkong. Further additions in the equipment had to be carried on in the workshop itself on the Hongkong model.

For some time they worked with brass and manufactured brass screws only. Later, they started manufacturing iron screws as well and executed numerous orders from the Supply Department, Railways, and from some Government factories engaged in essential war work. In 1943 the entire production of the factory was reserved for the Director-General, Munition Production, Calcutta.

Items of Manufacture :—The Universal Screw Factory manufacture M. S. Wood Screws, Brass Wood Screws, Machine

Screws and Rivets. At present they manufacture about 150,000 screws per day. They can easily increase their output to 500,000 screws per day.

Labour :—The factory employs about 175 workers half of whom have some sort of technical training.

Usha Bolt & Nut Co.

Proprietor. Mr. Bumji Palan. *Office:* 201, Harrison Road, Room No. 98—100, Calcutta. *Works:* Khandelwal Bhawan, 5, Hanspukar Lane, P.O. Burrabazar, Calcutta. *Telephone.* B.B. 5074 *Telegram.* USHANYAY.

The Company was started in 1946 with a capital of Rs. 2 lacs. It is engaged in the manufacture of Bolts, Nuts, Hook Bolts, Crack Bolts, Structural fittings, Containers and machinery parts, etc.

Vasant Engineering Ltd.

Office & Works Goya Gate, P. B. No. 38, Baroda.

Messrs. Vasant Engineering Ltd. was started in 1943. It is a private limited company manufacturing Machine Tools, Textile Machinery, Oil Expellers and Engineering Spares. Approximate capital investment is Rs. 5,00,000/- and number of workers under the firm is about 200.

Vasant Industrial & Engineering Works.

Managing Agents: Messrs. H. A. Shah & Co. *Office & Works:* "Vasant Vijay," 470-71, Worli, Bombay 18. *Telephone:* 45520. *Telegrams:* ASTRONOMY.

Introduction :—The Vasant Industrial & Engineering Works were founded in the year 1939 with 3 to 4 welding sets and about as many lathes. In 1940, most of the work was concentrated on the manufacture of textile, dyeing, bleaching and finishing machinery. Later, in the year 1942-43, the work of manufacturing chemical plants was also taken up.

Manufactures:—To-day the firm is undertaking the manufacture of the following lines:—

- (1) Textile Engineering:—Bleaching, dyeing, printing and finishing machinery, industrial humidification, air-conditioning refrigeration.
- (2) Electro Chemical plants for caustic and chlorine.
- (3) Oil Refineries and Vegetable Ghee Plants.
- (4) Manufacture of chemical plants, machinery for match, paper and other miscellaneous industries.

According to the special requirements of clients, specifications are drawn up by a group of engineers on the basis of which machines are built by the firm.

The machines manufactured by the concern are first tried and tested on production in their own establishment before they are sent out. They are at an average manufacturing 10 to 12 machines per month.

Fabrication of machinery is also taken up by them, according to standard requirements.

As Consulting Engineer:—The works are equipped with highly qualified engineers who also act as consultants regarding industrial plans.

Allied services in the structural, carpentary and masonry and other lines are made available for their clients by the firm.

The Firm has under its employ about 300 workers, of which about 200 are skilled hands.

Future Plans:—The firm is making steady progress and soon a Shafts manufacturing plant will be installed. Expansion of the line of Textile Machinery manufacture is also under their contemplation.

Victor Industries.

Managing Partner: Mr. Gian Singh Hunjan.

V. Sultan Wind, Amritsar. *Telegram:* WOODSCREW.

Introduction:—Victor Industries were formed early in the year 1943. The firm erected a well equipped workshop and then fabricated Woodscrew and Machine Screw Plants in their own workshop. Soon after they pushed their 'VICTOR' products in the market.

Items of Manufacture:—Messrs. Victor Industries are at present manufacturing the following:—

1. WOODSCREWS. All kinds of Brass and Iron with C.S.K. and Round Heads and from $\frac{1}{8}$ " to 2" in length with witworth and B.A. Threads.
2. MACHINE SCREWS. All kinds of Brass and Iron with Round, C.S.K. Cheese and Hexagonal heads, from $\frac{1}{8}$ " to $\frac{1}{4}$ " in width and from $\frac{1}{4}$ " to 2" in length.
3. RIVETS. All kinds of Mild Steel and copper with flat, Round and boss snap and Pan heads.
4. EYE HOOKS. All sizes and gauges.
5. PANEL PINS. All kinds of panel from $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " in length and from 16 to 20 in numbers.

Present Position:—The firm is producing approximately 500 gross of woodscrews, 100 gross of Machine Screws, 5 cwt. of Rivets, eye hooks and panel pins etc., per day. They can easily increase their production to 1,000 gross of Wood-screws, 300 Gross of Machine screws and 10 cwt. of Rivets, Hooks and panel pins etc. per day without any addition of machinery to the present plant.

Future Outlook:—They are manufacturing more plants to increase their production of Woodscrews etc.

Their products are sold under the Trade Mark "VICTOR." The firm is registered as one of the Government Approved Contractors at New Delhi and with the N. W. Railway at Lahore. They are also trying to convert their partnership concern into a Private Limited Company. The management have under consideration many schemes of improvements in the line. One of these improvements is to shave the heads of screws after which

it will be difficult to find any difference between foreign and indigenous screws. They have also under consideration the import of machinery from foreign countries to increase their production with a view to decreasing the cost.

Victory Engineering Works:

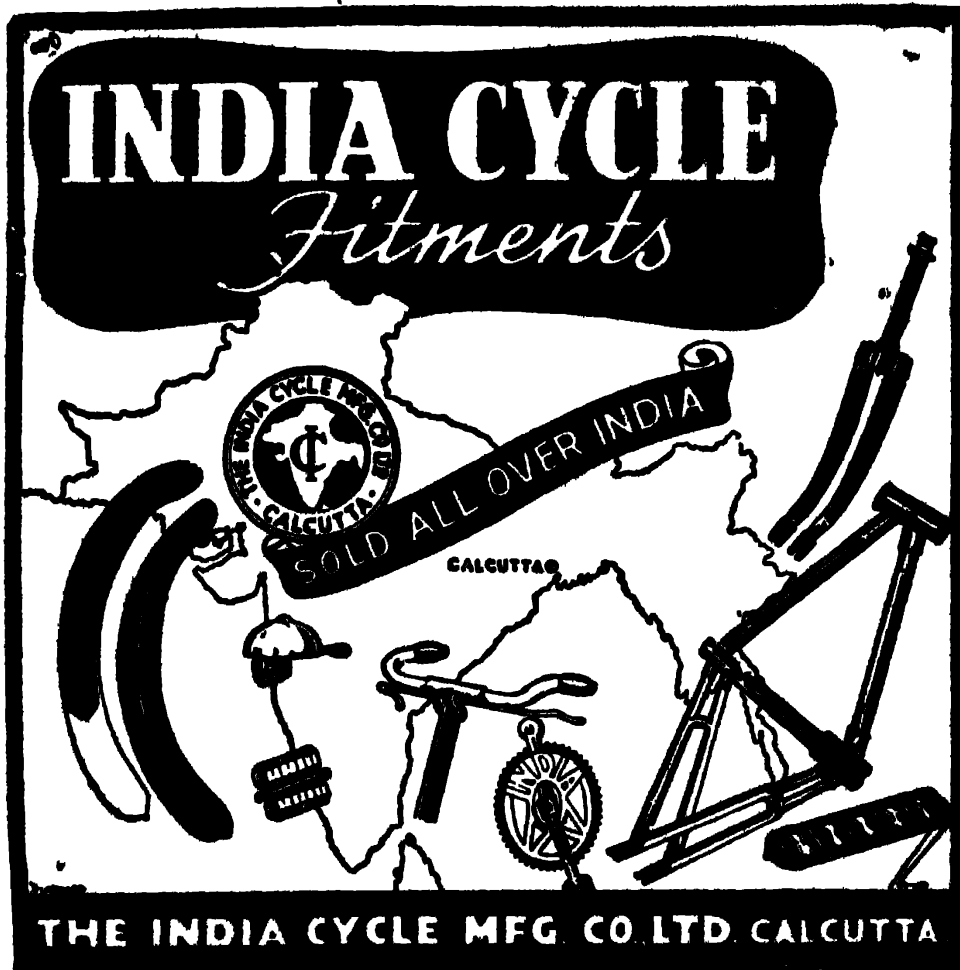
Proprietor: Mr. B. S. Gupta. *Office & Factory:* 40, Tangra Road, Calcutta. *Telephone:* Cal. 797.

Introduction:—The Victory Engineering Works were started in the middle of 1941.

Activities:—They undertake sheet metal fabrication, all kinds of welding and light structural work.

During the war, their factory was exclusively engaged on war work and their firm was registered as approved contractor to the Department of Supply for the supply of component parts for armoured vehicles.

Their present lines of manufacture are steel furniture, steel security equipment etc.

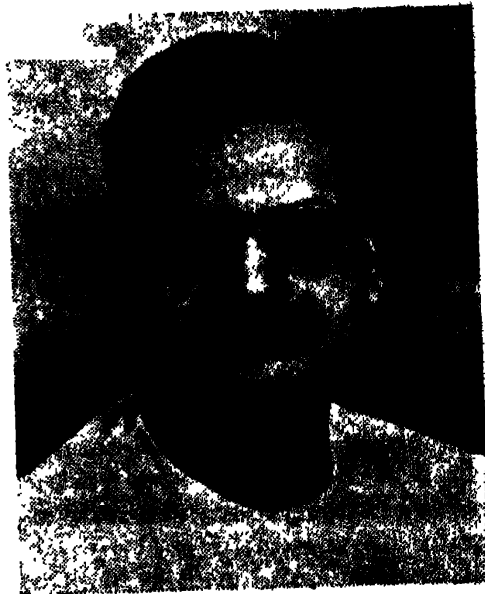




AGARWALLA RAI SAHIB J.P. was born on 22nd March, 1892: Passed Engineering, Electrical & Mechanical, from Thompson College, Roorkee. Served for some time in Alipore Posts & Telegraph Department, near-about 1st World War. After that served in various business houses for some time. Before and during the 2nd World War, he started purchasing machinery with a view to starting a factory. In 1941, he floated The Machine Mfg. Co., Ltd., with the object of manufacturing machine tools etc.

He was also instrumental in floating the Jamshedpur Engineering & Machine Mfg. Co., Ltd., and making it what it is today.

AGARWALLA, NURSINGDAS was born in 1905. Since 1922 he started taking keen interest in commercial activities of his managing Agency firm Messrs. Nursing & Co. He had his initial education in Bisudhananda Saraswati Vidyalaya and then studied privately commerce and engineering. His vast practical experience with business has given him considerable insight in engineering line. The activities of Messrs. Nursing & Co., upto 1926 were mainly restricted to exporting and dealing in scrap iron. After that, they turned to industries. The



first of their concern was Messrs. Tatanagar Foundry Co., Ltd., which was followed by many others. The most notable among them is "The National Iron & Steel Co., Ltd." wherein a 10 ton Electric Furnace, the biggest in the country and also a one ton furnace have been installed for making steel from scrap iron. Under his supervision one 25 ton Open Hearth furnace is also expected to be installed very soon.

1. The Tatanagar Foundry Co., Ltd., 2. The National Iron & Steel Co., Ltd., 3. The National Screw & Wire Products Ltd., 4. The Airways (India) Ltd., 5. The Britannia Building and Iron Co., Ltd. are at present being managed by him.

He is Director and/or Partner of many other concerns also.



ANAND AMBITLAL, Managing Director, The Kapurthala Industries Ltd., was born in 1921. Still a bachelor, he entered business at a comparatively young age of 21 while still studying Law, and having already taken the Degrees of Master of Arts in Economics and in English. Fond both of play and study, he has a flare for every type of machinery. He has built up this huge business and factory in the short span of 5 years, unassisted and quite independently by sheer hard labour. Throughout his college career he took active

part in political activities. He is exceptionally fond of reading and intellectual pursuits.

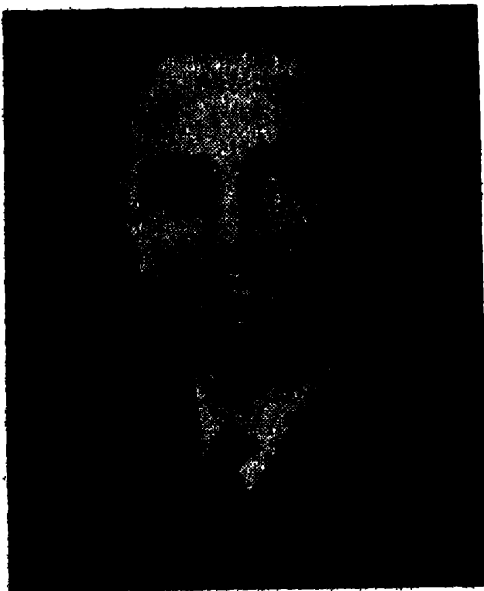
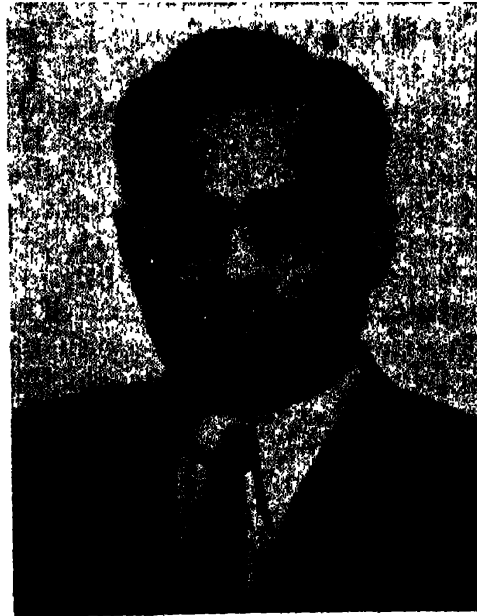
ATTA, MONILAL, born in 1918, at Salkia, Howrah. He is the son of Late Nafar Chandra Atta who started his career from a very humble position but ultimately became the founder of Atta's Iron Foundry, now regarded as one of the biggest and most reputed foundries and engineering concerns in Bengal. After the premature death of his father and elder brother the entire burden of Atta's Iron Foundry and other sister concerns was thrown upon him when he was only a boy of fifteen. Since then under his able guidance Atta's Concerns Viz. Foundry, Oil Mill, Rice Mill, Umbrella Department etc., have made much headway in the Industrial sphere.



In social life Mr. Atta occupies an eminent position as a Commissioner of Howrah Municipality, a prominent Congressman in the District and as office bearer of various benevolent institutions in the locality. A keen sportsman, Mr. Atta has been holding the office of the Hony. Secretary of a famous local Sporting Club for the last ten years. Recently he visited England as

the Asst. Manager of the Indian Boxing Contingent which participated in the World Olympic held in London in July, 1948.

BAGRI, P. R. B. COM., B. L.
Educated at the Calcutta University. Joined Bhartia Electric Steel Co. Ltd. in 1937 as an assistant, now Secretary of the Company. Director, Bhartia Trading Co. Ltd. Vice-President, Engineering Association of India.



BASHIR, SHEIKH MOHAMMED, Bashir Lodge, Kanpur, son of late Hon'ble Khan Bahadur Hafiz Mohammed was born in September 1902. Graduated in Science from Allahabad University. Proceeded to London where he added B. Com (Lond) F. R. E. S and became Bar-at-Law (Middle Temple). Has four sons. Was Honorary Magistrate for several years. A very well known figure he is closely associated with a number of Government, Semi Government, and public organisations.

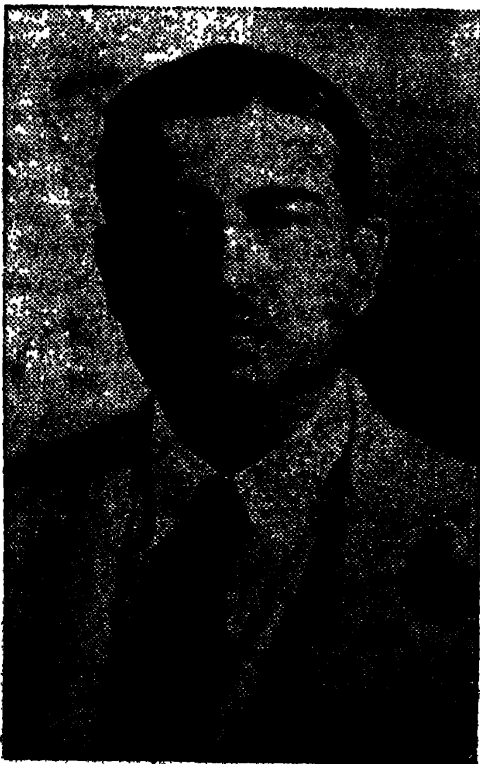
President : Merchants Chamber, U. P. and Rotary Club of Kanpur. **Director** : Juggilal Kamalapat Iron and Steel Co., Ltd. and Reserve Bank of India (Northern Delhi Area). **Partner** : Indian National Tannery and Auto Service Garage, Kanpur. **Member** : Cawnpore Improvement Trust, Juhi notified area, Board of Communication. U. P., Senate, Lucknow University, Provincial War Board, Municipal Board, Kanpur, and also of Iron & Steel Panels (both major and minor) of Government of India for Post war Development.

For recreation he is very actively interested in shooting, cricket and tennis; was captain of Indian Gymkhana team in England during 1924 and 1925.

BHATTA, RAI SAHIB L. CHHABIL DASS, was born in Bannu (N. W. F. P.) and has in him all the dash and boldness peculiar to Frontier martial race. Educated only moderately he has considerable experience of industry with which he has been associated ever since 1934. He is mainly interested in Electrical line of which Fan Industry is engaging most of his attention. Manufacture of Airconditioning plants, Refrigerators and other electric appliances and accessories is also under his active consideration. Sweet and kind hearted by temperament he is very sympathetic with labour. Rehabilitation of refugees has of late been his greatest concern and he has afforded them work and employment in the various concerns with which he is associated.

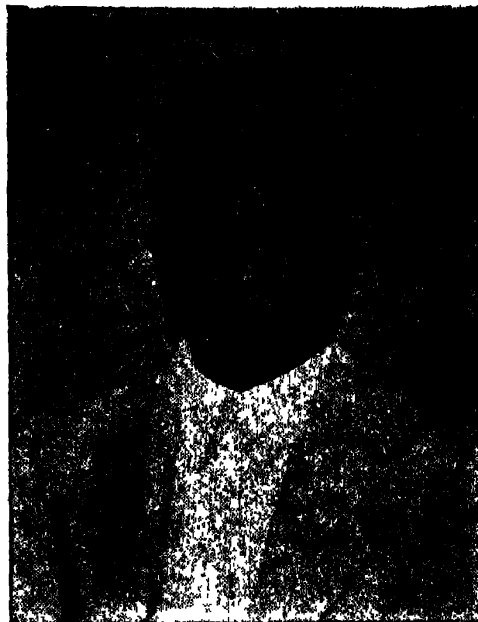


He is the proprietor of (1) Metropole Works, Verka, Amritsar, (2) Metropole Universal Products, Kapurthala, Director of Pride of India Film Co. Ltd., Delhi; Chairman of (1) Pride of India Theatres Ltd., Delhi, and two industrial Associations, The Mill Owners Association, Verka and Fan Manufacturers Association, Amritsar. He is also the Patron of Technical and Labour Union East Punjab, P. W. D. E. B.



BHATTACHARYA, A. K. :— Educated at Shantipur and Calcutta joined M/s. Nursing & Co., in 1929; became the Chief Officer of the National Iron & Steel Co., in 1937 and later that of the National Screw & Wire Products Ltd. He is very closely connected with several educational and charitable institutions. Is the member of the Executive Committee of the Indian Non-ferrous Metal Manufacturers' Association, the Coal Consumers' Association of India, Indian Steel Makers' Association etc., and is the President of the Engineering Association of India.

BINANI GOVARDHANDAS, 38, Strand Road, Calcutta. Comes from a family who have been associated with metals for generations. His personal experience in metal trade runs for 3 decades. He is the Managing Director of The Binani Metal Works Ltd., who are premier Non-ferrous Alloy manufacturers in this country and the sole proprietor of the firm Mathuradas Govardhandas, Managing Agents for Metal Distributors Ltd., the largest importers of Non-ferrous Metals in India. His interests also extend to the plastic industry and is the Director of the Plastic Moulders Ltd. He is the present President of the Indian Non-ferrous Metal Manufacturers' Association and Member, Development Committee for Non-ferrous industry and Central Advisory Council of Industries recently set up by the Government of India. Takes keen part in social activities and is also on the committee of the Indian Chamber of Commerce, Engineering Association of India, etc., etc.



BIRLA, K. K., was born in October, 1918. He is the second son of Mr. G. D. Birla. Was the president of the Indian Sugar Mills Association during 1946-47 and was its youngest president. Was also a member of the Industrial plant & Machinery panel (Heavy) set up by the Planning & Development department of the Government of India. Besides Textile Machinery Corporation Ltd., he looks after sugar mills and a number of concerns under the management of Birla Bros. Ltd.

He is now the Vice-president of the Indian Sugar Syndicate Ltd. Besides being a Director in a number of concerns, he is also serving on various Government Committees.

CHETTIAR, A. M. Murugappa son of Diwan Bahadur A. M. Murugappa Chettiar, Banker, 'Killowen', Mowbrays Road, Mylapore, Madras. Born on 12th January, 1901 and educated at Madras.

Director :—1. Ajax Products Limited, Madras. 2. Murugappa Agencies Ltd., Madras. 3. The Coromandel Engineering Co. Ltd., Madras. 4. The Indian Bank Ltd. 5. The Co-operative & Gen. Insee. Co. Ltd. 6. The Kanadukathan Electric Supply Corpn. Ltd. 7. The New Ambadi Estates Ltd. (Travancore) Trivandrum. 8. Murugappa & Sons (Travancore) Ltd., Trivandrum. 9. The Ceylon Universal Corporation Ltd., Colombo, (Ceylon) and various business interests in Burma. **Partner** : Murugappa & Sons, Managing Agents, Ajax Products Ltd. **Vice-president** : The Southern India Chamber of Commerce, Madras. **Central Committee Member** : in the All-India Manufacturers' Organization, Bombay. Was member in the Advisory Committee of Manufacturers of Engineer Stores, set up by the Director-General of Munitions Production, during the War Period.

Member in the Working Committee on Steel Furniture and Security Equipments and Coated Abrasives set up by the Ministry of Industry & Supply, Government of India, New Delhi.

Travelled around the World in connection with Commerce, and was delegate to the International Chamber of Commerce Conference which he attended at Washington.



DALAL, SIR ARDESHIR RUSTOMJI, K.C.I.E. Director and Partner : M/s. Tata Sons Ltd. and Tata Industries Ltd. Vice-Chairman and Director in-Charge : The Tata Iron & Steel Co. Ltd. Director : The Andhra Valley Power Supply Co. Ltd., The Indian Hotels Co. Ltd., The Tata Oil Mills Co. Ltd., Tata Chemicals Ltd., The Central Bank of India Ltd. The Associated Cement Co. Ltd., The Cement Marketing Co. of India Ltd., Tata Locomotive & Engineering Co. Ltd., The National Rayon Corporation Ltd., Tata Aircraft Ltd., and Investment Corporation of India Ltd.

Born: 24th April 1884. Married to Manackbai Jamshedji Ardeshir Wadia. Has one son and two daughters. Education: Elphinstone College, Bombay & St. John's College, Cambridge. Entered I. C. S. in 1909 and retired in 1931 to join the famous House of Tatas. Assistant Collector, Dharwar, Colaba, Bijapur; Superintendent, Land Records, Belgaum; Collector, Ratnagiri and Panch Mahals; Deputy Secretary, Government of Bombay, Revenue Department; Ag. Secretary, Government of Bombay, Finance Department; Ag. Secretary, Government of India, Education, Health and Land Department; Member, Bombay Legislative Council 1924-26 and Indian Legislative Assembly 1927; Municipal Commissioner, Bombay, 1928-31; President, Indian Chamber of Commerce, Calcutta, 1938-39, Employers' Federation of India and Indian Science Congress Association, 1941; Member H. E. the Viceroy's Executive Council (Planning and Development), July 1944.-1946; President, Court of Indian Institute of Science, Bangalore; Member, Board of Scientific and Industrial Research and Governing Body, Council of Scientific and Industrial Research.

Address : Bombay House, Fort, Bombay.

DAS, D. K. born in 1896 was educated in City College, Calcutta. He got his Master's degree in Arts from Calcutta University in 1918. He had a brilliant academic career but against all expectations of his friends & relations who thought he would either go in for law or take up educational line, S. Das was attracted to the field of commerce and industry. He along with his elder brother, the late aviator B. K. Das, started D. K. Das & Co. in 1938, with himself as its Managing Director.



In 1938, S. Das went on a tour of United Kingdom and the continent. There he visited several big factories and attended the Empire Exhibition in Glasgow.

He also purchased some up-to-date machinery for his workshop The Bantra Engineering Works. Moreover, he secured Sole Agency for various high class Engineer's Tools and Stores.

During the war period he with Sri S. K. Das started two other private limited companies viz. National Bolts & Rivets Ltd. and Castings Corporation (India) Ltd., both in Howrah.

Das served the public during the war as a chief Air Raid Warden in Howrah. He was for sometime the President of the Howrah Manufacturers' Association. He is also connected with many public institutions of Howrah and Calcutta as President or an active member.

DRIVER, DARAB-CURSETJI, Deputy Agent, Tata Iron & Steel Co. Ltd., Calcutta, born, 19th January 1888. Educ : B. A., Elphinstone College, Bombay ; M. A., Ammanul College, Cambridge ; Bar-at-Law, Gray's Inn, London. President, Coal Consumers Association of India, Calcutta, 1946-47, 1947-48, 1948-49 ; Past President, Indian Chamber of Commerce, Calcutta 1947 ; and Engineering Association of India, Calcutta, 1943-46, Chairman, Executive Committee Indian Institute of Art in Industry ; Member of Committees, Indian Chamber of Commerce, Engineering Association of India, Indian Mining Association and Indian Engineering Association, Calcutta, etc., etc. Address : 23B, Netaji Subhas Road, Calcutta.

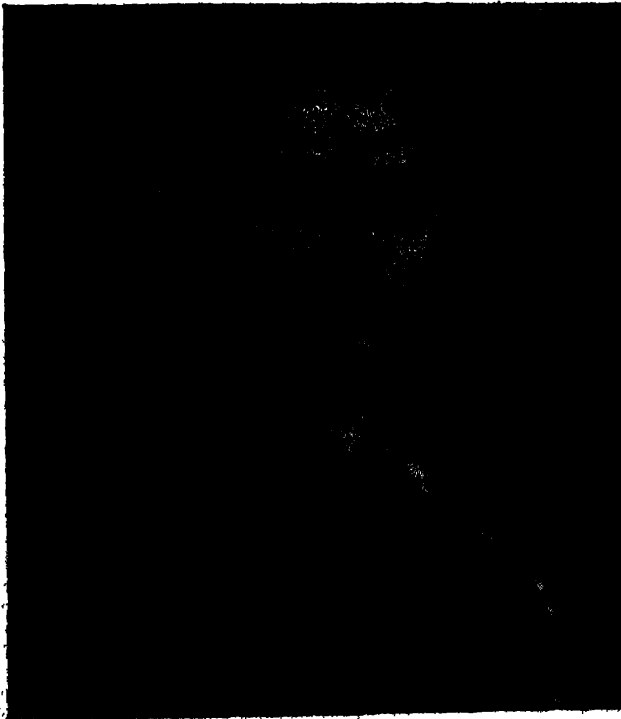


GHOSH RATNESWAR the soul brain and life blood of Bungo Steel Furniture Ltd., is the Managing Director of the Firm. A distinguished industrialist of Bengal he works with a purpose and is always anxious to restore the the Bengali craftsman and artisan to its former position. He is very closely interested in the welfare of labour whose physical, mental and spiritual developments are always his constant anxiety. The factory only provides a free scope for the full expression of his personality in the numerous amenities provided to the employees and the quality products of the factory. Interested in Machines his emphasis is always on the Man.

GOENKA, J. P., B. com., born in 1922 at Calcutta. Received his earlier education in the Presidency College, Calcutta and later on joined Vidyasagar College, Calcutta from where he obtained his Bachelor's Degree in the year 1944. He is the partner of the well known firm of Messrs. Ram Dutt Ram Kissen Dass who are the Managing Agents of—Hukumchand Jute Mills Ltd. Kamala Mills Ltd. Hind Cotton Mills Ltd. Bhagwati Pressing Co. Ltd. Baitakhal Tea Co. Ltd. Standard General Assurance Co. Ltd. Indian Malleable Castings Ltd. New India Investment Corporation Ltd. Calcutta Investment Co. Ltd. Jaipur Investment Co. Ltd. Hindusthan Airways Ltd. Bhagwati Trading Co. Ltd.



A man of very amiable temperament he is very closely connected with a number of educational and charitable institutions. He is also a member of the Executive Committee of the Engineering Association of India.

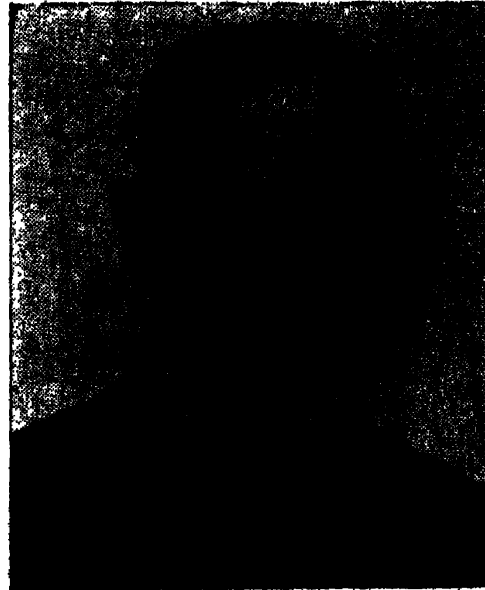


GOOPTU, R A M PROSAD, son of late Rai Bahadur F a n i n d r a Nath Gooptu was born on March 29th, 1901 in the famous Gooptu family of Bengal. Graduated in Science from the St. Xavier's College, Calcutta, in 1921 and entered business the same year. Undertook an extensive tour of the U. K. and the continent in 1931. He, in partnership with his brothers Mr. Prasad Gooptu, Mr. Rabi Prosad Gooptu both of whom are also Graduates, is very

actively looking after the affairs of Messrs. F. N. Gooptu & Co., Calcutta.

the celebrated concern

GUHA, SARADINDU obtained diploma in Mechanical & Electrical Engineering from Bengal Engineering College, Shibpur, in 1925 and received training in the Works of Messrs. B. D. Berry & Co., Calcutta, where he was engaged in the manufacture of Diesel Engines.



He is founder-engineer of the Swaika Oil Mills, and the Sidheswari Cotton Mills, Ltd., Howrah. In 1930 he started "LILUAH IRON WORKS" in a rented place with one bellow, one anvil and a few small tools.

In 1946 Sree S. Guha was sent to Germany by the Government of India as a technical investigator into German industries.

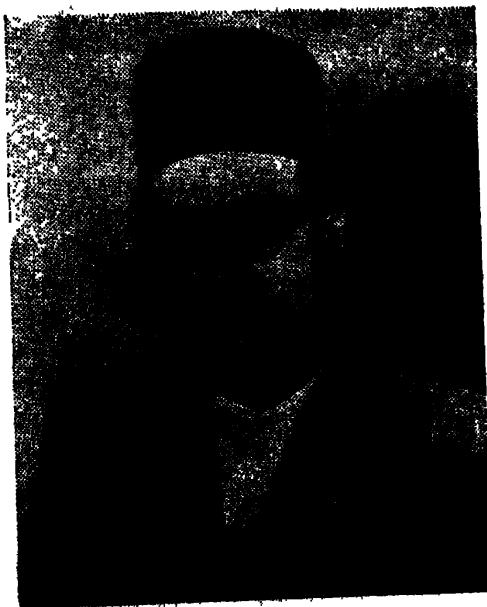
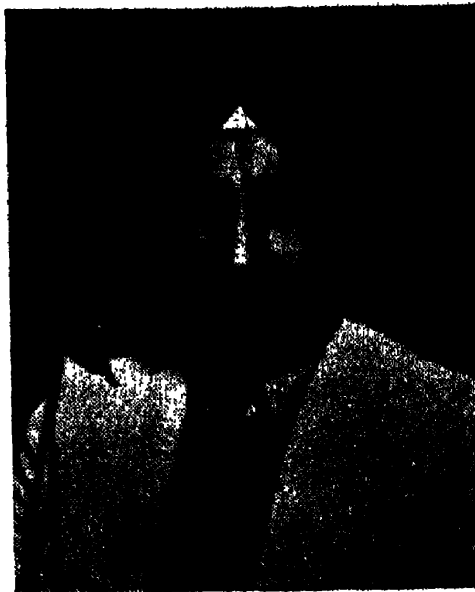
He is consulting engineer to a number of Textile and other Mills.



GUPTA, BHAGWAT DAYAL, partner, Chhuttanlall Mattumal, Delhi, was born in 1915. In 1935 he joined his works after completing his studies at Delhi University. Here he gained a good deal of experience in the casting of Ferrous & Non-Ferrous metals as well as other mechanical side. In 1947 he proceeded to overseas countries to get the first hand knowledge in Foundry and Mechanical Departments and visited a number of factories in England, America, France and Belgium. He is expanding his works for the mass manufacture of agricultural implements, sanitary goods and other miscellaneous machinery parts.

GUPTA, BHAGWAT DAYAL, partner, Chhuttanlall Mattumal, Delhi, was born in 1915. In 1935 he joined his works after completing his studies at Delhi University. Here he gained a good deal of experience in the casting of Ferrous & Non-Ferrous metals as well as other mechanical side. In 1947 he proceeded to overseas countries to get the first hand knowledge in Foundry and Mechanical Departments and visited a number of factories in England, America, France and Belgium. He is expanding his works for the mass manufacture of agricultural implements, sanitary goods and other miscellaneous machinery parts.

HUNDAL, GURBACHAN SINGH of The Leipzig Chemical and Engineering Works, Calcutta is a man of great initiative with aptitude for inventions. He has a special interest in Food Grain machinery. He has designed many new types of machinery which were eventually patented. His Patent No. 33164 relates to a machine which can husk and split various types of grains at the same time. His another patent No. 33508 is for a Hose Clip, a double action clip which remains stuck to its adjustment and would not slip even under heavy strain.

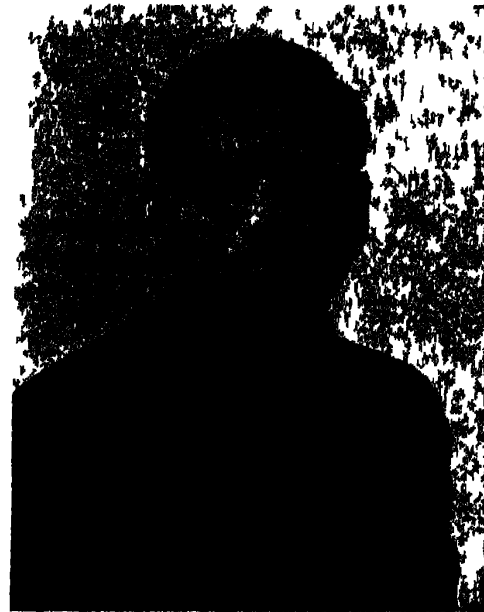


JAIN, SETH SHITAL PRASAD entered business life at a very early age and carried on business in India as Metal Merchants, under the name and style of Seth Jugmandar-dass Shitalprasad Jain, the main business being the Import & Export of metals and Metal scraps. It has been his long cherished desire to establish a Non-ferrous Metal Industry in India as he was much pained to see that the scrap which used to be exported was coming back in the shape of refined alloys. The War brought Indian industries to a precarious stage when they

were unable to get their requirements from foreign countries and no suitable equivalent were available in India. To meet this Seth Shital Prasad floated Saru Smelting & Refining Corporation which has been converted into a public company in 1946. He has recently floated another concern named Saru Engineering Co., Ltd., for manufacturing light and heavy machineries of all descriptions.

JAIPURIA, Seth Mangtaram, 51, Vivekanand Road, Calcutta. Son of Seth Anandram Jaipuria deceased. Was born in 1900. He belongs to the Jaipuria family of Nawalgarh (Jaipur). As Director and Managing Director of about 33 companies he has wide manufacturing interests in Textiles, Silk, Bakelite, Sugar, Oiling, and mining in Coal, Mica etc.

JALAN, DEVKINANDAN, born in 1918 is the fourth son of the late Seth Bansidharji Jalan who is accredited as one of the supreme architects of the well-known firm M/s. Soorajmull Nagarmull which owns or manages Jute and Cotton Mills, Jute Presses, Sugar Factories, Engineering & Boat Building Works, Oxygen, Acetylene and Gas Works, Soap and Glass Factories etc. Shri Devkinandan Jalan is one of the partners of this well-known Managing Agency firm. He is also the Director of (1) Naskarpara Jute Mills Co. Ltd., (2) Star Textiles Ltd., (3) W. H. Harton & Co. Ltd., (4) Howrah Trading Co. Ltd. (6) The Rajputana Investment & Finance Ltd.

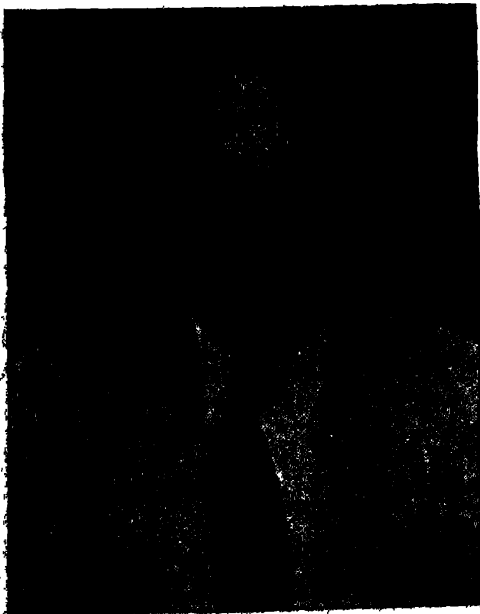


Naturally Shri Devkinandan Jalan had the opportunity of receiving considerable business training in his family firm having been associated with its management ever since he was 16 years of age. Being impressed by the extraordinary intelligence of Shri Devkinandan Jalan while he was quite young, his uncle Seth Baijnath Jalan now the Head of the Firm M/s. Soorajmull Nagarmull and an acknowledged authority on Jute & Hemp, Finance and Exchange, adopted him as his son. While yet in his teens, Shri Devkinandan Jalan showed a business aptitude of a very high order. Even though he was so young, he was entrusted with highly responsible duties of the Jute Department. Later on he was entrusted with the difficult duties of the management of Sugar and also Jute Mills which he discharged with remarkable ability and efficiency. When the management of M/s. Jas. Alexander & Co. Ltd., an engineering firm of high repute, passed on from European to Indian hands, Shri Devkinandan Jalan was chosen as the right man to take up the management of the Factory in his own hands as a Director with the result that within a course of a few years, Messrs. Jas. Alexander & Co. Ltd., have occupied a prominent position among the important Engineering Firms of India. With amazing capacity and unsurpassed devotion he shouldered his new heavy responsibilities. Right from Sales, Planning, Distribution and

Production down to minutest details, there is nothing which escapes his notice. The extremely difficult nature of the task entrusted to him can very well be realised when we take into consideration the multifarious and variegated jobs which are undertaken by the Company for the Government, Railways, Corporations, Municipalities and Industrial concerns all over India.

Courteous and amiable by disposition, Shri Devkinandan Jalan possesses a religious and charitable disposition, a legacy from his father whose princely munificence in so many charitable causes is too well known.

JASDENVALA, A. A. The Director in Charge of the Indian Standard Metal Co. Ltd. occupies an important position in the commercial as well as the public life of Bombay. He is on the board of several Companies. He is the President of Bombay Iron Merchants Association and represents this association on the Committee of the Indian Merchants Chamber. Mr. A. A. Jasdenvala was the Sheriff of Bombay in year 1946. He is connected in various capacities with many educational, sporting and public institutions.



JHAMB, C. D., 41, Elgin Road, Calcutta : Educated at and graduated from Lahore, joined business in 1920. Leading Sugar Importer. Prominent Punjabi business man of Calcutta. Proprietor Jhamb Bros. & Co., and W. Leslie (Motors)—Authorised Ford Dealers. Connected actively with non-ferrous Industry since 1941 as Director, Kamani group of Concerns. Senior Vice-President, Indian Non-Ferrous Metals Manufacturers' Association, Calcutta, and its official Representative on the Engineering Divisional Council of the Indian Standards Institution

and the Metals Development Committee of the Government of India; Committee Member of The Engineering Association of India, etc., etc.

KAMANI, R. H was born in 1886 at Dhari in the Amreli District of Kathiawar.

His association with metals would extend to about 40 years. From humble beginnings he developed an extensive business in Aluminium Utensils and later even commenced manufacture. In 1913 he founded the firm of Jeewanlal Company, now Jaewanlal (1929) Ltd. From 1939 to 1941 he was the Managing Director of Mukand Iron & Steel Works Ltd., the premier steel manufacturing Company in Western India.



In 1941 he turned to the Non-ferrous Engineering Industries, and bought over Messrs. W. Leslie & Co. Calcutta, manufacturing Aluminium, Brass and Copper Utensils. In 1943 he floated Jaipur Metal Industries with a paid-up capital of Rupees 20 lakhs, for the manufacture of Brass, Copper and Arsenical Copper Rods, Alloy Casting etc. In 1944 he floated Messrs Kamani Metals & Alloys Ltd. which is today one of the leading firms in the Non-ferrous line. In 1945 he floated Kamani Engineering Corporation.

In 1945 he organised the Indian Non-ferrous Metals Manufacturers Association of which he became the Founder-President.

In 1945 he was appointed on the Non-ferrous Industrial Panel set up by Government of India, In 1944 he organised and was the President of the Jaipur Chamber of Commerce. He was one of the first few Industrialists who agitated for protection to Industries which had been set up in war time. It was as a result of his efforts, that the Government referred the case of the Non-ferrous Industry to the Indian Tariff Board. He was also a member of the Working Committee of Non-ferrous Manufacturers set up by Government after the war.

In 1939 he was awarded the title of Raj-Ratna for his social, educational and moral uplift services to the Baroda State.

He is considered a pioneer of Non-ferrous industry in India and is widely respected by other manufacturers in the line.

He has been associated with numerous social and political activities also.

In 1921, in response to Mahatma Gandhi's call for non-cooperation, he left his prosperous business and became an active worker in the production and popularisation of Khaddar production in Kathiwar.

Since 1931, he has diverted much of his energies towards village reconstruction. He opened a school for agriculturists (Khedut Shala), in order to educate the peasants. Student's scholarships, Village libraries, Harijan Uplift, Women's Gymnasiums, etc., are some of those causes to which he has always contributed generously.

KHEMKA, Gopi Krishna
B.A., B.L., born 1911, Batangarh,
Bikaner State, Rajputana; Educa-
ted in Calcutta; Industrialist and
Entrepreneur, Chairman of the
Associated Industrial Develop-
ment Co. Ltd., the Managing
Agents of several engineering
concerns among them the National
Insulated Cable Co. of India Ltd.,
the National Rolling Mills Ltd.,
the National Pipe & Tubes Co.,
Ltd., etc. Director of several
leading companies, e. g., the India
Steamship Co. Ltd. and its
Managing Agents Messrs. Nionel
House, Calcutta, residence
Chittaranjan Avenue Calcutta.



Edwards Ltd., office 'Stephen
'Khemka Building', P-58,



KUMAR RAJ, Tanda Road,
Jullunder City; banker and
industrialist, he is associated
with several Engineering
Concerns in E. Punjab. Young
man of initiative and energy,
he is deeply interested in
Machinery and allied indus-
tries. He is the Managing
Director of M/s. Khem Chand
Raj Kumar.

LAW, B. D. Technical Director, Kassels Ltd., Delhi, was Born in May, 1903.

Had very good academic and technical career. He is one of the founders of the India Electric Works Ltd., Calcutta, with which he was associated for about two decades. He is at present Technical Director Kassels Limited, Delhi.

He is very keenly interested in the production of electric fans motors and other allied things.

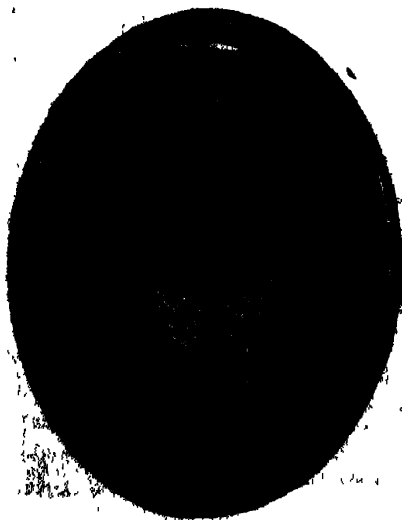


MISRA, SIR LAKSHMI PATI was educated at the Thompson Engineering College Roorkee. He joined the Indian State Railways Service in October, 1911 and was promoted to the rank of an Executive Engineer in 1918. In 1924 his services were lent to the Foreign and Political Department of the Government of India for employment as Deputy Manager and Engineer-in-Chief of the Baroda State Railways. Proceeded to Europe to study the divisional organisation and the general management of English and German Railways in 1927.

In 1929 he was placed on a special duty with the Railway Board for implementing the Washington and Geneva conventions on his Railway. Transferred to North Western Railway in 1930 as Controller of Stores. A year after he was called on special duty again to investigate the question of possible economies in the engineering department of the East Indian Railway. On completion of his Special Duty he was promoted to the post of Deputy Agent and worked in addition as President of the Committee appointed by the Railway Board to enquire into the grievances of the Crew (Ticket-Checking) staff of the East Indian Railway.

and staff of the combined Press of the East Indian and Eastern Bengal Railways. After three years as Deputy Agent he was promoted to the post of Divisional Superintendent, Howrah Division. Among the important measures introduced by him during his tenure of the last-named position were the provision of 80-sec. halts on suburban train services and the reservation of seats for Third Class passengers which was commended in the Report of the Wedgewood Committee. In July, 1938, his services were requisitioned by Home Department of the Government of India as a Member of the Federal Public Service Commission. On return he was appointed General Manager of the Eastern Bengal Railway. He was responsible for amalgamating the Assam Bengal Railway with the Eastern Bengal Railway after the former had been acquired by the State. Sir Lakshmipati Misra also worked as Commissioner for the Port of Calcutta for four years from September 1939 to September 1943, when he was appointed Member, Engineering Railway Board, Government of India in November, 1943 and in addition to his own duties, prepared the Post-war Reconstruction Plan of 320 crores for State Railways in India.

Sir Lakshmipati Misra has all along been taking active interest in the Institution of Engineers (India) of which he was elected President in 1943. He was mentioned in Despatches for Gallant and Distinguished Services during the Operation in Burma and on the North East Frontier—June 1942 to May, 1943. He was the first Indian Railway Officer to be appointed Deputy General Manager, East Indian Railway, and subsequently Chief Commissioner, Railway Board, Government of India. He was also the first Indian employee of Railways to receive the Honour of Knighthood. He has now on retirement joined Birla Brothers to plan and develop the manufacture of Automobiles in India.



MUKHERJEE, K. P. is the Managing Director of the East India Steel Works Ltd. He had his initial training with Messrs. Godrej & Boyce Mfg. Co. the biggest manufacturing concern in this line in the East. Mr. Mukherjee started business in 1943. Safes and cabinet manufacture is his special line and he is constantly at work to improve the quality of his products which are gaining popularity both here and abroad.

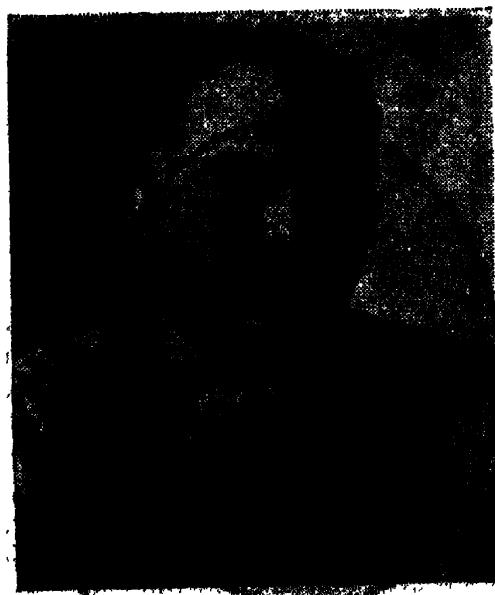


Mr. OJHA.

The New Bansdeopur Coal Co., Ltd. Messrs. Pure Sitalpur Coal Concern Ltd. Messrs. Guzdar Kajora Coal Mines Ltd. Messrs. Jote Dhemo Colliery Co., Ltd. The National Metal Industries Ltd. The Metal Products Ltd. Messrs. Amritlal Ojha & Sons, Ltd., Bombay. Messrs. Amritlal Ojha & Co. (Burma) Ltd. The Rainbow Soap & Chemical Co., Ltd. The Indian Enamel Works Ltd. The Indian Shipping Industry Ltd. He is also a member of the Committee of the Engineering Association of India, Calcutta. Address :—"Security House", 23-B, Netaji Subhas Road, Calcutta.

OJHA BHUPATRAY, son of the late Mr. Amritlal Ojha; born in 1918, at Calcutta; Educated in St. Xavier's, Calcutta. Joined business in 1937. Was in the Coal Fields for three years, having been trained in all sections of Coal Mining. Later acted and supervised in various capacities in the Coal Fields. Travelled widely in India. Managing Director of The Great Social Life & General Assurance Limited. Mr. Ojha is the Director of :—The Calcutta Safe Deposit Co., Ltd. Messrs. Amritlal Ojha & Co., Ltd. Messrs. Ojha Brothers Ltd. Messrs. Shree Mahakali Coal Mines Ltd.

PANDYA, DR. A. H. Sc.D. (Eng.) M.I.E. (Ind.) M.Am. Soc. C.E., A.M.I. Struct. E., A.M. Inst. W. etc. Born in Bhavnagar in 1909; educated at University Bombay standing First in the First Class in all of the Engineering Examinations of the University; awarded numerous merit scholarships and the James Barkeley Gold Medal and prize on graduation; continued his engineering studies at the Massachusetts Institute of Technology, where among other honours, he was awarded the Austin Research Fellowship; he was also made an Honorary Fellow of the Institute "as an unusual mark of distinction" on receiving the degree



of Doctor of Science in Engineering; awarded the Lincoln prize of 18,000 dollars; granted British patent No. 512867 for "Continuous cranked beam construction" in 1939; joined the Trussed Concrete Steel Co. Ltd., and became Chief Engineer; was Deputy Director-General of Munitions production, Government of India; at present General Manager and Director, Hind Constructions Limited.



PARIKH, CHIMANLAL DAHYABHAI,—152, Lohar Street, Bombay, was born on the 4th June 1901 at Kepadwanj, Gujerat. He is a pioneer in the hardware industry, particularly in the manufacture of household fittings. In 1934 he started Jayant Metal Mfg. Co., which is now well-known throughout the country for its best available fittings and fixtures. For the first time in India he started during the war a wire drawing factory for the manufacture of very fine copper and silver wire for the Jari Industry. The famous Indian Standard

Metal Co., Ltd., Bombay, owned by Tatas since 1943 were started by him. The Star Metal Refinery which is the only producer of Antimony "STARMETAL" in India was started by him during the war in 1940. He is one of the leading personalities in the non-ferrous metals industry of the country.

Of a very charitable disposition he has set up Jayant Sarvanjanik Hospital at Kapadwanj, his home town.

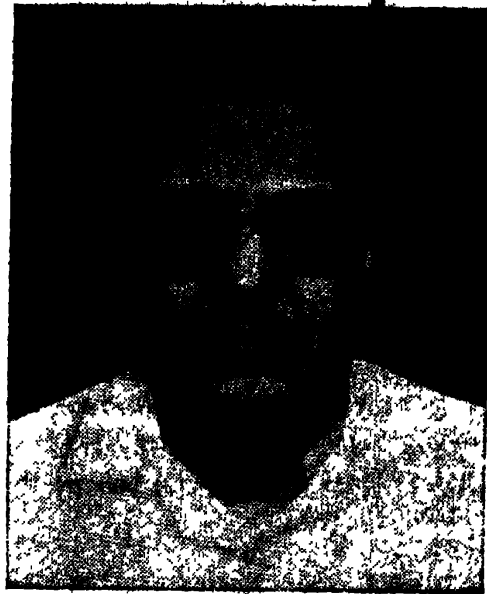
PAUL, S. N., B. E. (Mech.), A.M.A.E., A.M.I.E. (Ind). was born in January 1918. Graduated in Mechanical Engineering from the Calcutta University in the year 1935. He then joined the Howrah Engineering Works of Messrs. Burn & Co., Ltd. and completed two years practical training course. Worked as Assistant Engineer in the Mechanical Engineering Department of Messrs. Volkart Brothers, Calcutta, and served for a period of about one year.



In the year 1941, he founded Paul's Engineering Co. a partnership firm with a workshop comprising of two Lathes and one Drilling Machine. He worked both in administrative and practical spheres with tireless energy and within a year stepped up to Machine Tool and Lathe Chuck manufacture. The first chuck produced by the Firm interested Messrs. Marshall Sons & Co., (India) Ltd. so much that they were pleased to be appointed as Sole Selling Agents in India. Later on, he designed some special Machines which played a great part in the betterment of the Chuck manufacture.

The Diploma A.M.I.E. was conferred upon him by the institution in 1945. He is closely associated as member of the Executive Committees with (a) The Association of Engineers, Calcutta, (2) The Chamber of Industries, Calcutta, (3) Technical Section, Sri Ramkrishna Mission, Saradapith, (4) The Howrah Manufacturers' Association, Howrah and is connected with various other Associations, social and educational.

RAJGARHIA, SETH BABULALJI, 13, Syed Salley Lane, Calcutta, is the son of late Kedarnathji, born in 1958 (Sambat). His father died when he was only 15 years old. Could not have proper schooling facilities, but his private study is amazingly deep and varied. His personal library of 15 000 to 20,000 books, built up by himself is a living testimony to his sound erudition. Deeply interested in religion and religious philosophy, his insight in business and industry is no less. He has thorough knowledge of Mica and Jute & Engineering Industries. Kedarnath Jute Mfg. Co., Ltd. Babulal & Co., Ltd., Hanuman Engineering Works, The Central Bengal Chemical Works, The International Contractors Ltd., The Bajrang Commercial Co., The Hanuman Properties Ltd, National Properties Ltd, Kedarnath Babulal Ltd., all are the result of his brain and untiring energy.



He is closely connected with a number of Public Institutions. He has written a number of treatises on various subjects which await publication. He submitted a thesis to the Royal Society of Arts, London and was awarded fellowship. His study of Physiology and Psychology is also very deep.

Very kind and charitable of disposition he has donated, often very handsomely and yet anonymously to various charity institutions.

A part of his properties is dedicated to the trust called "The Kedarnath Babulal Charity Fund.

He was married in 1916 to Shrimoty Asharfi Devi, the highly accomplished daughter of Seth Gangaramji Poddar. She herself is the Managing Director of the Hanuman Properties Ltd. and Director of many others. Has no issue.

RAM, SIR SHRI, KT., CR. 1941; Landlord Banker, and Millowner born Delhi, 26 April 1884; son of Lala Girdhar Lal; three s. Educ.; Delhi. Apprentice Engineering Section, Delhi Cloth Mills, 1904-5; started ginning factory 1907-8; re-joined Delhi Cloth Mills, 1909; Manager, 1912, now Managing Director. Member, Executive Committee, Punjab Chamber of Commerce for 20 years; Hon. Secretary, Hindustani Mercantile Association, 1920; first industrialist of Northern India to be elected President of Federation of the Indian Chambers of Commerce; Member, Delhi Municipality, 15 years and Vice-President 6 years. Created Shri Ram Research Institute for Scientific & Industrial Research, Created with two others, Commercial Educational Trust, which endowed Commercial College and Commercial Higher Secondary School and which also runs Anglo Sanskrit Higher Secondary School and two primary schools. Managing Agent, Jay Engineering Works Ltd., Bengal Potteries Ltd. Director, Central & Local Boards of the Reserve Bank of India, Indian National Airways Ltd., Delhi Central Electric Power Authority Ltd., Free India General Insurance Co., Ltd., Bharat Starch & Chemical Ltd., Delhi Biscuit Co. Ltd., Madan Mohan Lall Shri Ram & Co. Ltd., Commercial Credit Corporation. Member, Trade Mission to Afganistan 1934. Former President, International Chamber of Commerce and All India Federation of Employers & Labour. Hon. Official Adviser to Government on Indo-Japanese Trade Negotiations 33, 34, 36 & 37. One of the signatories to the Bombay Plan. Chairman, Panel Post-war Planning on Sugar, Alcohol and Food Yeast and Heavy Chemicals. Member of Panel on Indian Textile Industry, Member of the Executive Committee of the Federation of Indian Chambers of Commerce & Industry. Member



of the Executive Committee of the Dictionary of Economic Products and Industrial Resources of India, and all India Organisation of Industrial Employers. Member, T. B. Association India and Vice President of its Executive Committee. Member, Indian Industrial Research Council, Board of Scientific & Industrial Research, Central Advisory Board of Utilization. Member, Panel Textile Control Board, West Delhi Notified Area Committee. Trustee of the Delhi Improvement Trust. Trustee and financier of Vigyan Kala Bhawan for Education and Research of Scientific Knowledge. Chairman of Governing Bodies & Trusts of the Indraprastha, Ramdas and Hindu Colleges. Donates entire income above necessary living expenses to Shri Ram Charitable Trust.

Publication : Municipal Problems in Delhi. Address : 22, Curzon Road, New Delhi. T : 7805 Clul Roshanara.

A special mention may be made that it was due to Sir Shri Ram's foresight and courage that a Pioneer Precision Engineering Industry has been established successfully in the country. To day it has become an Institution for Production Engineers where really precision work is being done within quarter of a thousand limit and Sewing Machine which is so complicated is being made successfully at the rate of 1,800 per month with an ultimate capacity of 3,000 per month.

ROHATGI, MR. B I N A Y KRISHNA, B. SC., industrialist and businessman of Calcutta is the son of the late Mr. Jay Krishna Rohatgi, the financier and banker. Born in 1900 at Calcutta Mr. Rohatgi was educated at the St. Xavier's College from where after graduating in 1920 he pursued the post-graduate course at the Science College of the Calcutta University. After that he joined his father's firm of reputed bankers which has been in existence at Calcutta and Patna for the last 150 years. Since 1930 he is the Managing Director of India Electric Works Ltd., the premier factory manufacturing electric fans, motors, plastic products, scientific instruments, railway signalling apparatus etc. In 1945 Mr. Rohatgi established an electric lamp manufacturing factory at Patna under the name and style of 'Pradip Lamp Works' of which he is the proprietor.



Mr. Rohatgi was a Director of the local branch of the Bihar Bank Ltd., for several years; Chairman of two important Committees of the Calcutta Rotary Club; a member of the Committee of the Indian Chamber of Commerce, Calcutta, and the All-India Organisation of Industrial Employers, New Delhi. During the war he was the Vice-Chairman of the Engineering Stores Advisory Committee attached to the Directorate General of Munitions Production of the Govt. of India and a member of the General Advisory Committee of the same Directorate. In addition to these Mr. Rohatgi was also a member of several Committees attached to the D. G. M. P.

Mr. Rohatgi, now member, Engineering Association of India was its President for two consecutive years 1946-48. Chairman of the Fan Makers Association of India, Chairman of the Indian Society for Quality Control; the President of the Upper India Association; Vice-Chairman of the Indian Electrical Manufacturers Association; Director, Hind Chemicals Ltd., Cawnpore, and Jay Engineering Works Ltd., Calcutta; Member Regional Advisory Committee and Vocational Training Advisory Committee of Re-Settlement and Re-Employment Department; Member, East Indian Railway, Howrah Goods Advisory Committee, Indian Science Congress; and a fellow of the Indian Chemical Society. Address. 45, Armenian Street, Calcutta.



ROW, KOWTHA SURYA-NARAYAN, Governing Director of The Indian Commerce & Industries Co., Ltd., Madras. Was Born in 1876 at Kondaveedu a village in Guntur District. Educated at Narasapur. Started life as a School Master in 1902. Took up mill stores business in 1905 at Bezwada under the name & style of Indian Commerce & Industries Co., and extended same to Madras in 1914 with branches at Tanjore and Bezwada. Founded the Beehive Foundry

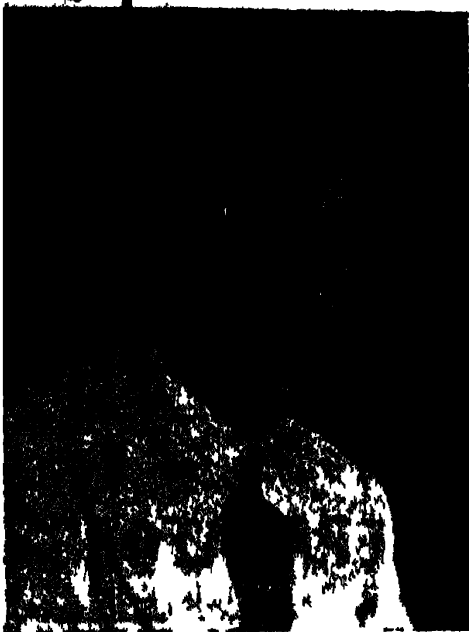
Engineering Works in 1922 at Madras. Converted the business to a limited Company in 1937. Started the Kowtha Business Syndicate Ltd. in 1945, and Kowtha Steel Products at Ramavarappadu for melting steel. Was a member of the South Indian Chamber of Commerce, Madras for many years. Director of Bank of Hindusthan Ltd., Madras. Vice-President—Andhra Chamber of Commerce, Madras. Governing Director—Kowtha Business Syndicate Ltd. and Indian Commerce & Industries Co. Ltd. Managing Director—Swadharma Swaraja Sangha (Orthodox National League) Ltd. Gave evidence before the Industrial Commission.

SHAH, L. R. was Born in, 1919, Educated in Science College, Patna, up to B. Sc. Started business career in 1940. He is the Founder Director of a number of firms, namely, (1) Electric Construction & Equipment Co. Ltd., (2) Eastern Silk Mfg. Co. Ltd., (3) Lakshmi Textile Mills Ltd., (4) Hind Glass Works Ltd., (5) Shah Properties Ltd., (6) Shah Textile Ltd., (7) Bihar Textile Ltd., (1) New General Agents Ltd.

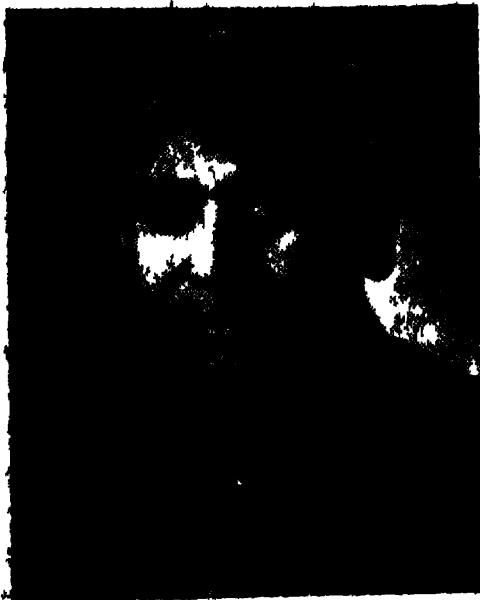
He has firm belief in the potentiality of India and is always anxious to contribute his share to the Industrialisation of the country apace.



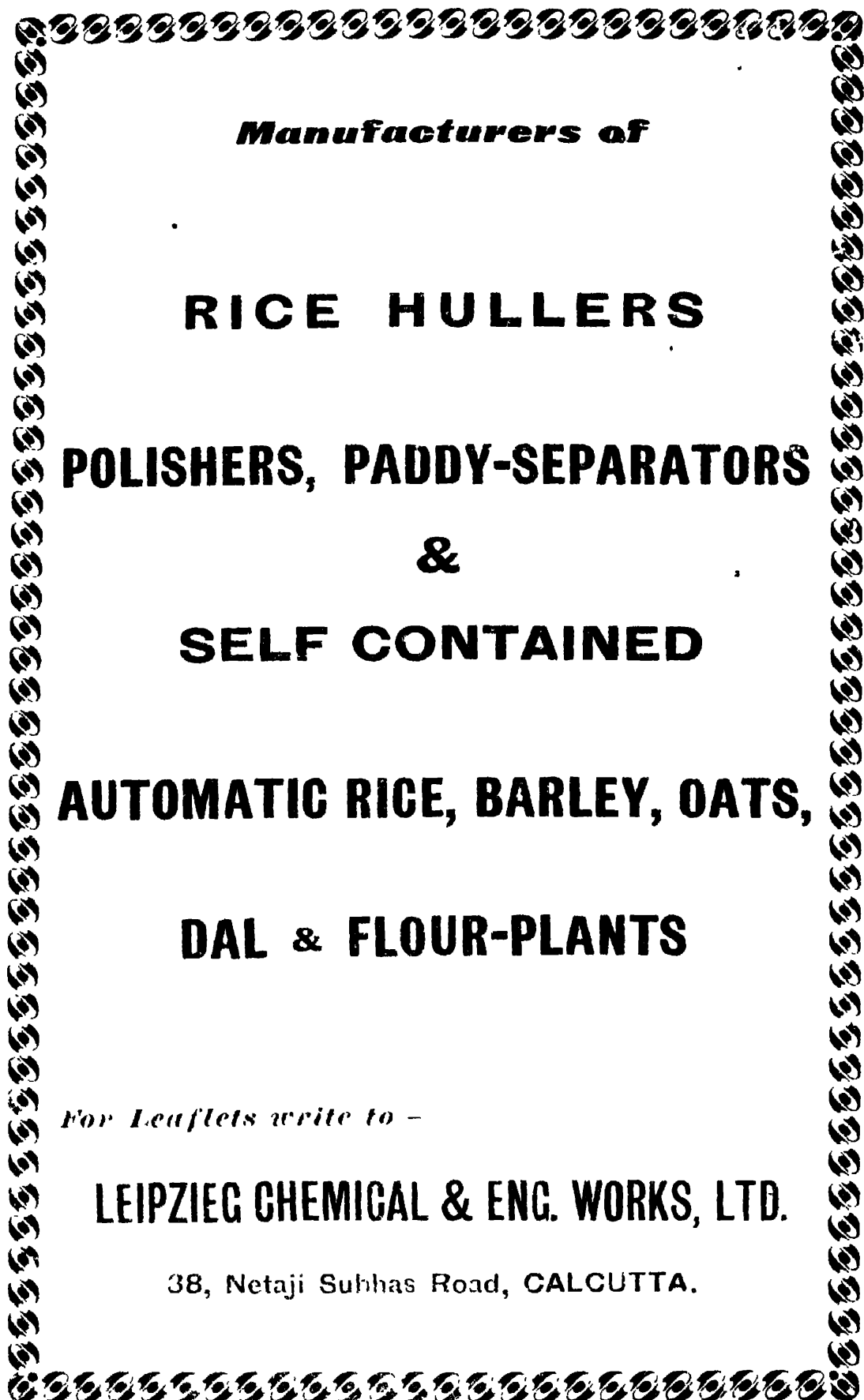
SHARMA, B. N., 133, Canning Street, Calcutta, born in 1912, Received his education at Calcutta. Entered business in 1938. Mr. Sharma is one of the Directors of the Orient Safe & Cabinet Mfg., Co., Ltd., whose products of Safes and Cabinets have gained wide popularity throughout the length and breadth of the country mainly on account of his strenuous efforts in the direction. Very kind of disposition Mr. Sharma is connected with various social and charitable institutions.



SINHA, S. B., Managing Director, G. T. R. Company has been associated with it since 1934 when he entered the firm as Commercial Manager. A man of enterprise and resourcefulness he has added many new lines to the manufactures of the firm. The popularity gained by G. T. R. fans is entirely due to his efforts and skill. Went to England in 1945 and visited a number of electrical goods manufacturing concerns. He is planning to take up the manufacture of Enamelled wires also.



THIRANI KRISHNHLAL has business connections with many manufacturing firms and has himself started manufacturing such items as sand paper, Emery paper, Emery cloth, Glass cloth, Tapes, Discs, Combinations, Endless bands etc., potteries, and Glass Wares. He has extraordinary capacity to organize industries and works very hard to establish indigenous industries. His present concern is how to replace foreign products by indigenous ones and make India self-sufficient.



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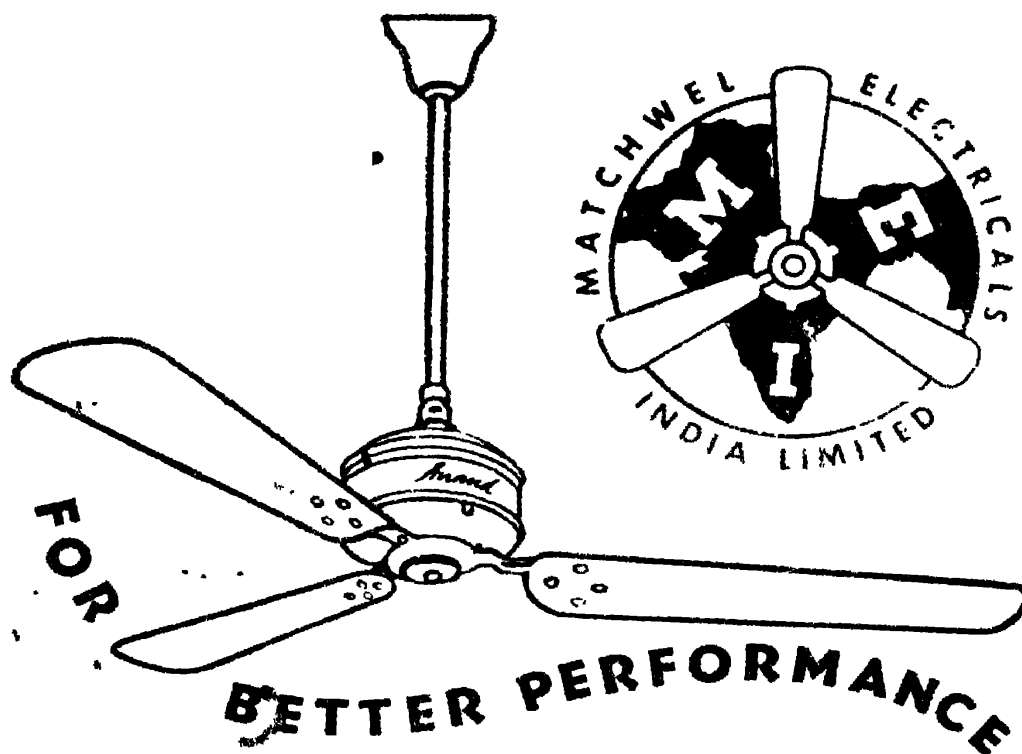
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